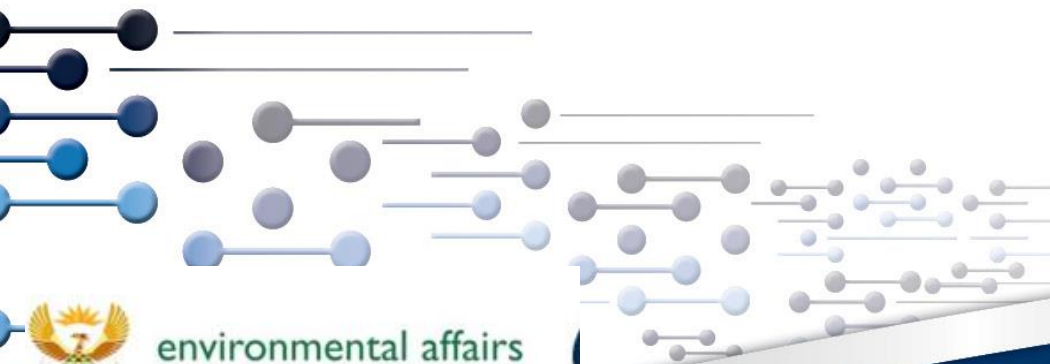


Phase 2 of the Wind and Solar PV Strategic Environmental Assessment for the Efficient and Effective Rollout of Wind and Solar PV Energy in South Africa



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

SANBI

Biodiversity for Life



South African National Biodiversity Institute

CSIR
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Agenda

PROJECT STEERING COMMITTEE (PSC) AND EXPERT REFERENCE GROUP (ERG) MEETING 4:

STRATEGIC ENVIRONMENTAL ASSESSMENT FOR PHASE 2 OF THE IDENTIFICATION OF RENEWABLE ENERGY DEVELOPMENT ZONES FOR WIND AND SOLAR PV IN SOUTH AFRICA

Meeting Details:

DATE	TIME	VENUE
Thursday, 26 September 2019	10:00 to 13:00	CSIR Pretoria Campus Meiring Naude Road, Brummeria, Pretoria Knowledge Commons - Ulwazi Auditorium

Proceedings will be as follows:

TIME	ACTIVITY/PRESENTATION	PRESENTER
09:45 - 10:00	Tea and Registration	All
10:00 - 10:10	Welcome and Introductions	DEFF
10:10 - 10:20	Background to the Phase 2 Wind and Solar PV SEA	CSIR
10:20 - 10:40	Phase 2 Wind and Solar PV SEA approach	CSIR
10:40 - 11:00	Discussion	All
11:00 - 11:50	Specialist Assessments : Key findings	CSIR
11:50 - 12:10	Discussion	All
12:10 - 12:20	Final focus areas	CSIR
12:20 - 12:40	Way forward	DEFF
12:40 - 13:00	Discussion	All
13:00	Lunch	All

PHASE 2 STRATEGIC ENVIRONMENTAL ASSESSMENT FOR WIND AND SOLAR PHOTOVOLTAIC ENERGY IN SOUTH AFRICA

2019



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PHASE 2 STRATEGIC ENVIRONMENTAL ASSESSMENT
FOR WIND AND SOLAR PHOTOVOLTAIC
ENERGY IN SOUTH AFRICA

PART 1

INTRODUCTION



Background - Strategic Integrated Projects (SIPs)

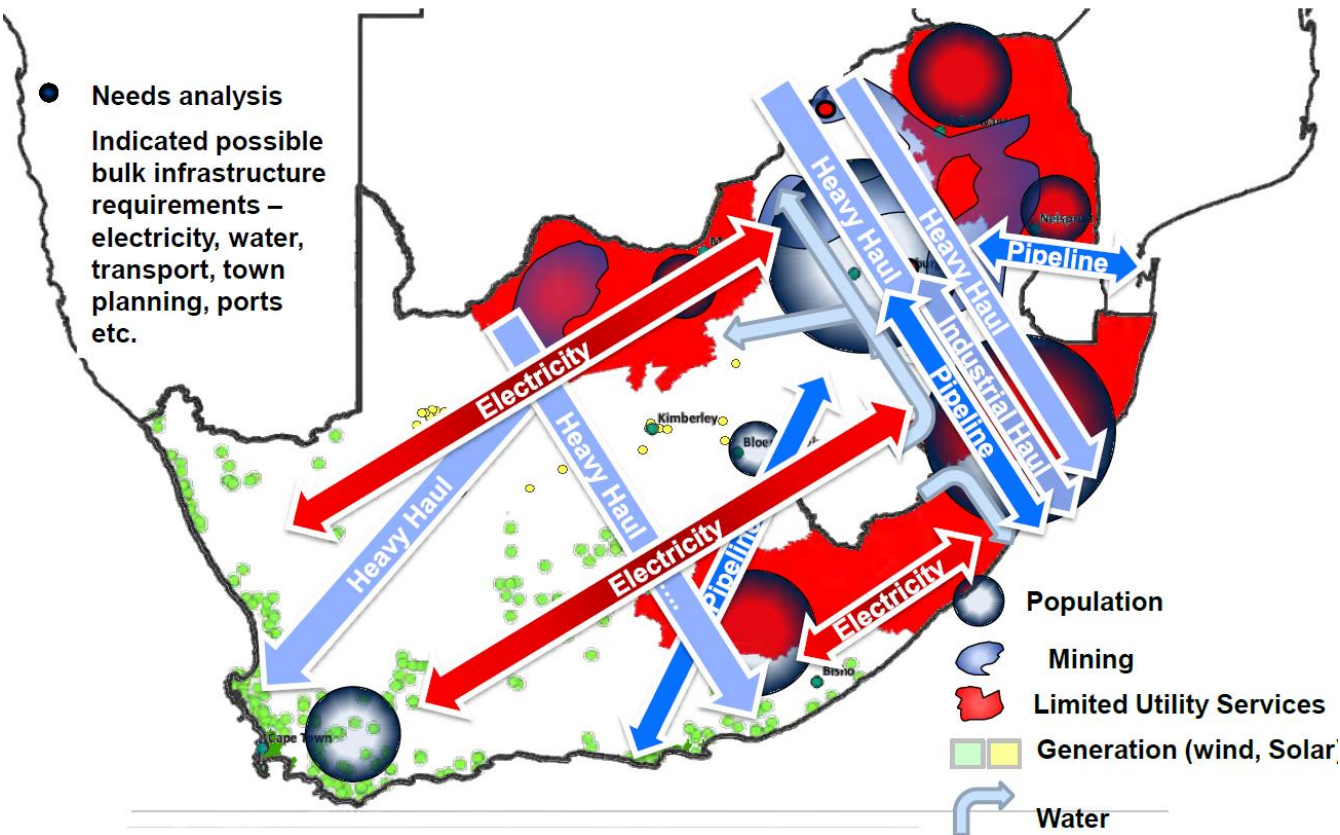
From the spatial analysis of the country needs, 17 (+1) Strategic Integrated Projects (SIPs) have been identified.

The SIPs cover a range of economic and social infrastructure.

All nine provinces are covered.

Needs analysis of infrastructure to support economic development and trade whilst simultaneously addressing the needs of the poor

- Needs analysis
Indicated possible bulk infrastructure requirements – electricity, water, transport, town planning, ports etc.



Three energy related SIPs

SIP 8: Green energy in support of the South African economy

- Roll out of the Integrated Resource Plan (IRP2010)

SIP 10: Electricity transmission & distribution

- Expand the transmission and distribution network

SIP 9: Electricity generation to support socioeconomic development

- Accelerated construction of new electricity generation capacity

Strategic Integrated Projects (SIPs)

1 Unlocking the Northern Mineral Belt with Waterberg as the Catalyst

2 Durban- Free State 3Gauteng Logistics and Industrial Corridor

3 South Eastern node & corridor development

4 Unlocking the economic opportunities in North West Province

5 Saldanha-Northern Cape Development Corridor6

6 Integrated Municipal Infrastructure Project

7 Integrated Urban Space and Public Transport Programme

8 Green Energy in support of the South African economy

9 Electricity Generation to support socio-economic development

10 Electricity Transmission and Distribution for all

11 Agri-Logistics and Rural Infrastructure

12 Revitalisation of public hospitals and other health facilities

13 National school build programme

14 Higher Education Infrastructure

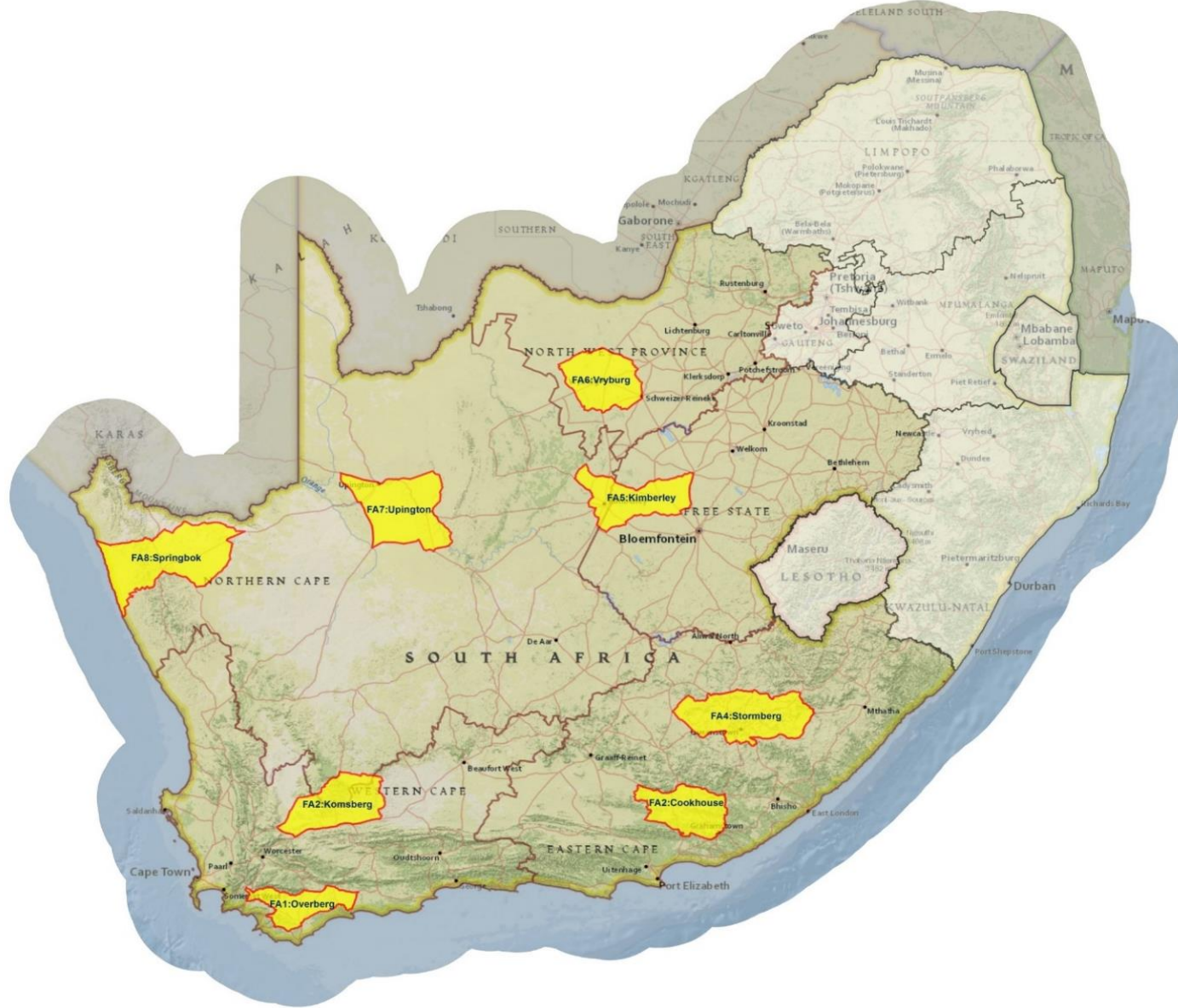
15 Expanding access to communication technology

16 SKA & MeerKat

17 Regional Integration for African cooperation and development

18Water and Sanitation Infrastructure Master Plan

Phase 1 REDZs – gazetted February 2018



Key objectives of the study

- **Identify geographical areas : Renewable Energy Development Zones (REDZs)**
 - (5 – 20 years) large scale (several projects)
- **Decrease the risk of development in the REDZs**
 - regional level assessments
 - wide authority and private sector buy-in
- **Streamlining the environmental authorisation process**
 - more focused and streamlined legislated process (sensitivity analysis)
- **Enable strategic planning and investment**
 - e.g. strategic investment by Eskom to unlock high development potential areas, lower cost of grid access, and provide time-efficient grid access for RE
- **Contribute to planning for a Just Transition towards a low carbon, climate resilient economy and society**
 - identifying REDZs in previously mined areas
- **REDZs closer to demand centre**



Legal Framework

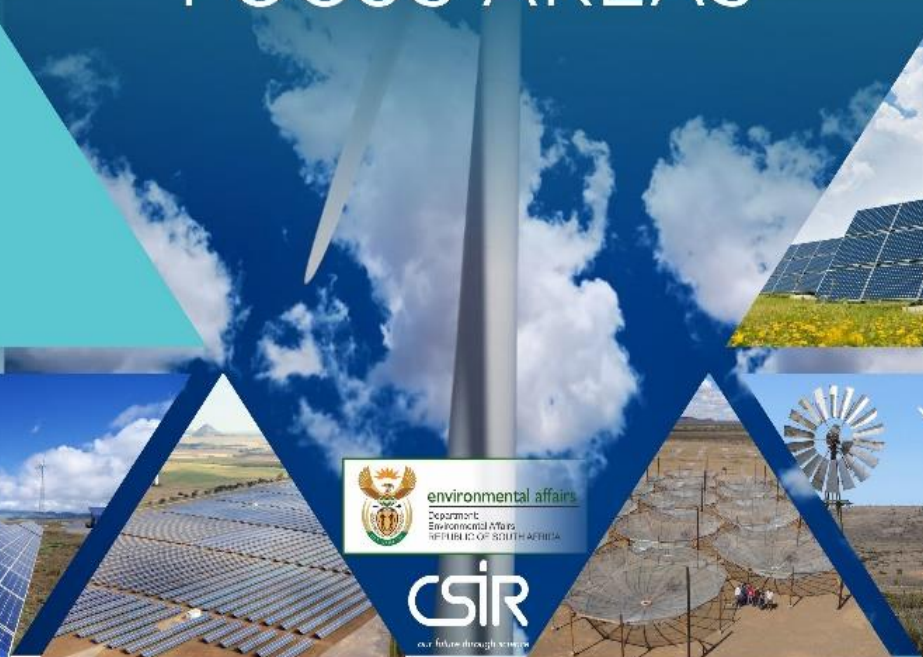
- **National Environmental Management Act (NEMA), Act no. 107 of 1998**
 - Section 24(2) – Identification of geographical areas
 - Section 24(3) – Compilation of maps
 - Section 24(5) – Laying down of procedures for application and assessment



PHASE 2 STRATEGIC ENVIRONMENTAL ASSESSMENT
FOR WIND AND SOLAR PHOTOVOLTAIC
ENERGY IN SOUTH AFRICA

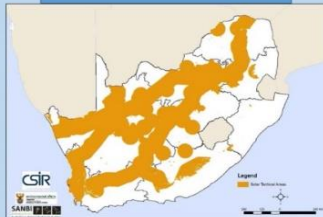
PART 2

IDENTIFICATION OF THE WIND AND SOLAR PV FOCUS AREAS

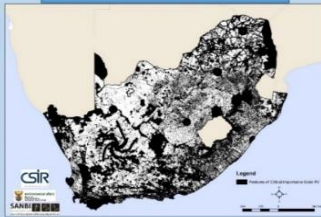


Phase 2 SEA

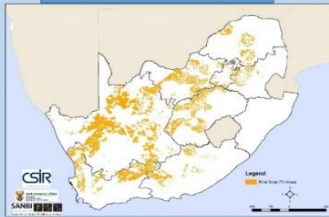
Positive Mapping



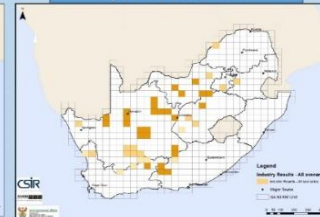
Negative mapping



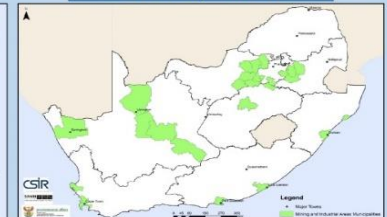
Remaining Areas



Industry prioritisation

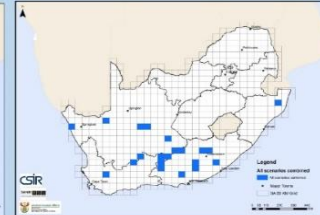
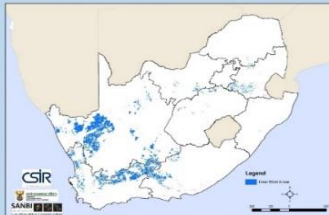
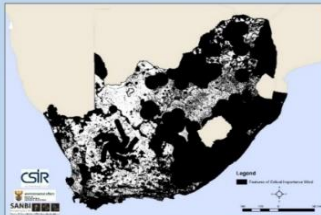
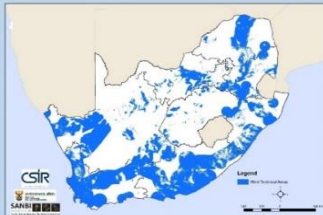


Mining and Industrial Municipalities



Solar PV

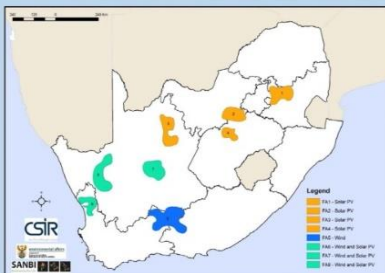
Wind



Phase 1

Phase 2

Final Focus Ares for Assessment



Industry Prioritisation of 8 Focus Areas



Environmental and Planning Sensitivities

Planning	Environment
Civil Aviation	Agriculture
Defence	Bats
Flicker	Biodiversity
Noise	Birds
SKA	Heritage
Telecommunications	Noise
Weather	
Existing infrastructure	
Potential to utilise old mines	
Proximity to load centre	

Phase 3

Phase 4



Final REDZs and Submission to Cabinet

Solar PV

Wind

Technical considerations from industry

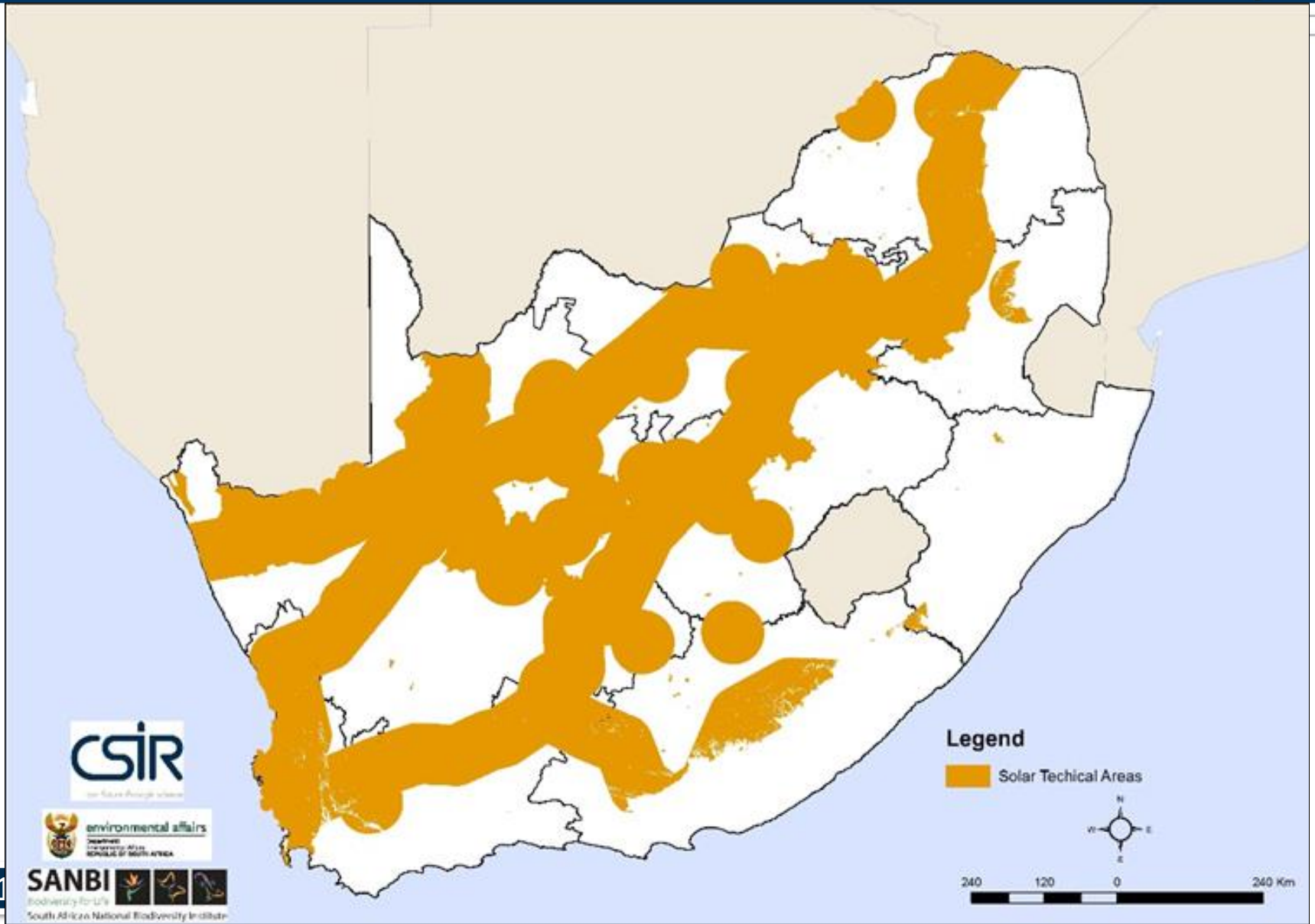
Solar PV technical criteria:

- Areas with PV yield (single axis tracking) above 1850 kWh/kWp and within municipalities with clusters of previously mined land
- Areas with PV yield (single axis tracking) above 1850 kWh/kWp and within 50km of the solar PV Projects selected in round 1 to round 4b of the REIPPPP
- Areas with PV yield (single axis tracking) above 1850 kWh/kWp and within 50km of the solar PV Projects with an approved EA from DEA
- Areas with PV yield (single axis tracking) above 1850 kWh/kWp and within the EGI corridors

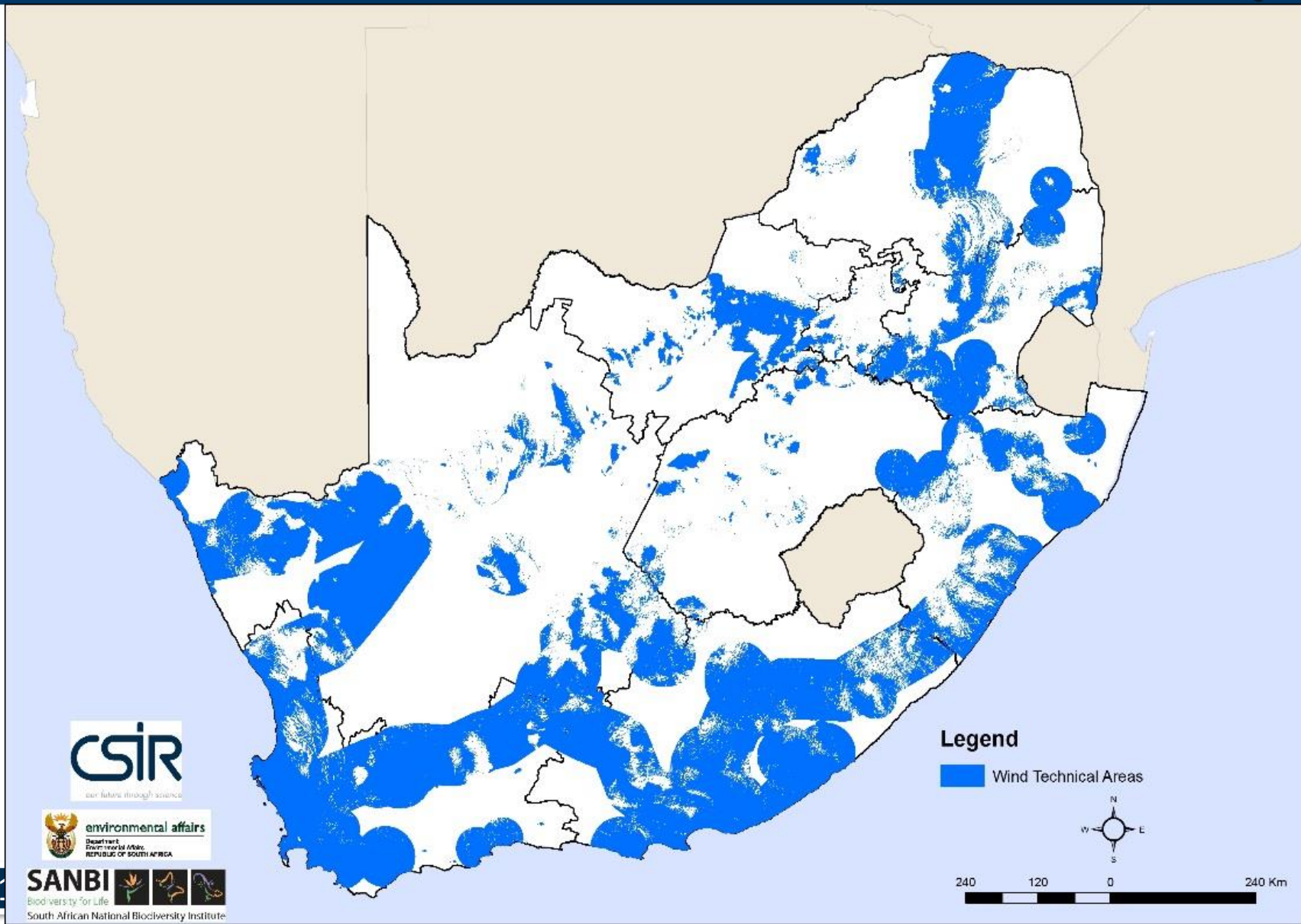
Wind technical criteria:

- Areas with power density above 250 W/m² and within 50km of the projects selected in round 1 to round 4b of the REIPPPP
- Areas with power density above 250 W/m² and within 50km of the projects with an approved EA from DEA
- Areas with power density above 250 W/m² and within the power corridors identified for the expansion of the strategic grid infrastructure
- Areas with power density above 250 W/m² and within 35km of MTS substations identified in the TDP and GCCA2017 datasets

Solar PV Development Potential



Wind Development Potential (including Nov 2017 WASA data)



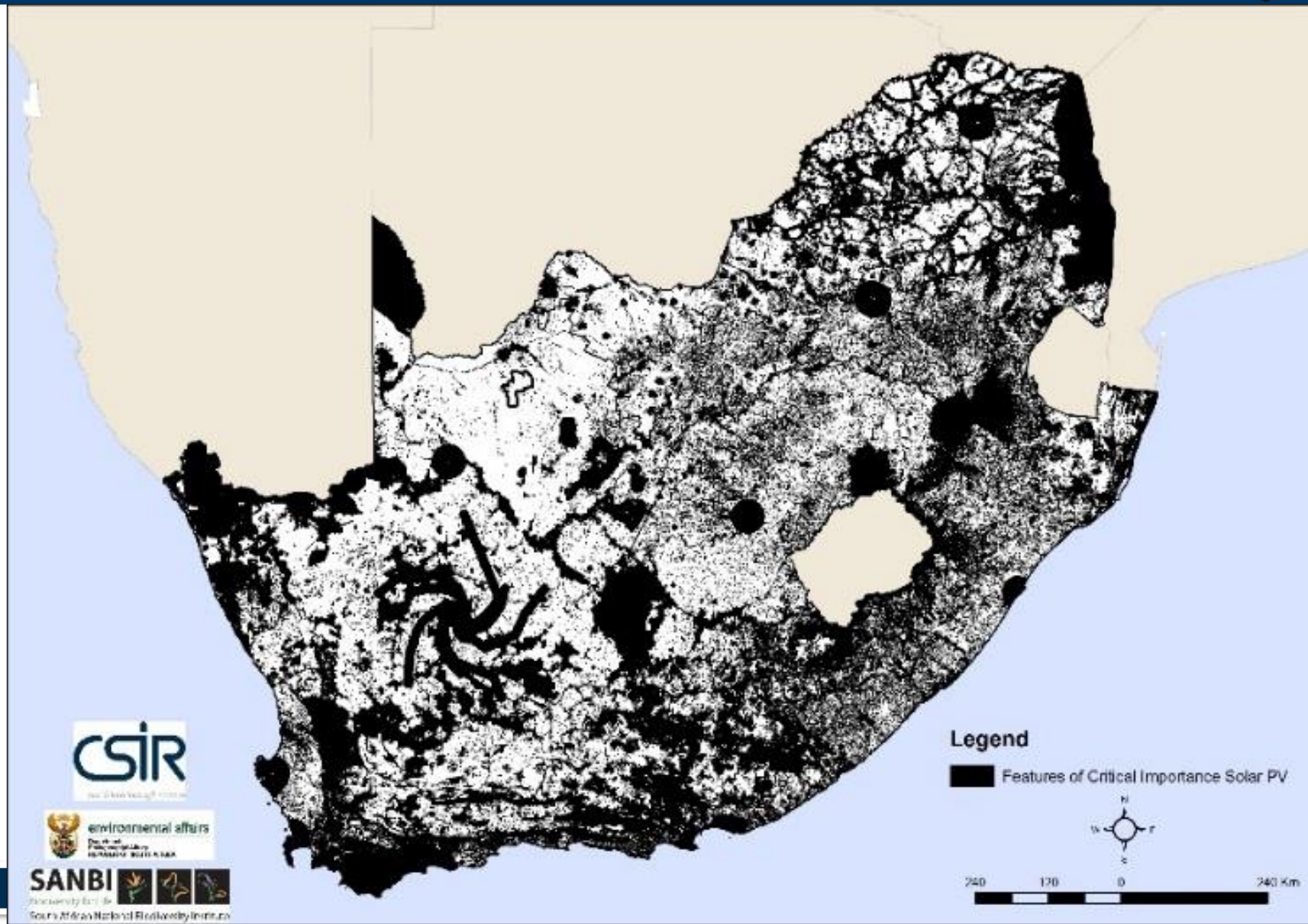
Features of critical importance

Criteria	Source	Features
Protected Areas	South African Protected Areas Database (SAPAD) - Q1, 2017 , South African National Parks (SANParks) and Provincial.	Marine Protected Areas
		National Parks
		Nature Reserves
		World Heritage Sites (Core)
		Mountain Catchment Areas (Natural)
		Protected Environments (Natural)
		Forest Nature Reserve
		Forest Wilderness Area
		Special Nature Reserve
Critical Biodiversity Areas (CBAs)	Provinces	CBA1 only
Water features	NFEPA	Wetlands (500m) and Major Rivers(32m)
	CSIR	Estuaries (Floodplain)
	CSIR	SWSAs (Natural) --> ONLY KEEP SURFACE SWSAs
Forest	DAFF	Forest
Square Kilometre Array (SKA) Area	SKA	SKA study Area
Heritage	SAHR	All grades and declared sites (add UNESCO sites)
Field Crop Boundaries	DAFF	Pivot, Shadenet, Horticulture and Viticulture
Land Capability	DAFF	Categories 11-15
Defence	SANDF	Features
Birds	VULPRO	VULPRO cape vulture colonies 50 km VULPRO cape vulture restaurants 10 km
	NMMU	NMMU cape vulture roost sites 50 km
Bats		Bat Roosts
		Ecoregions

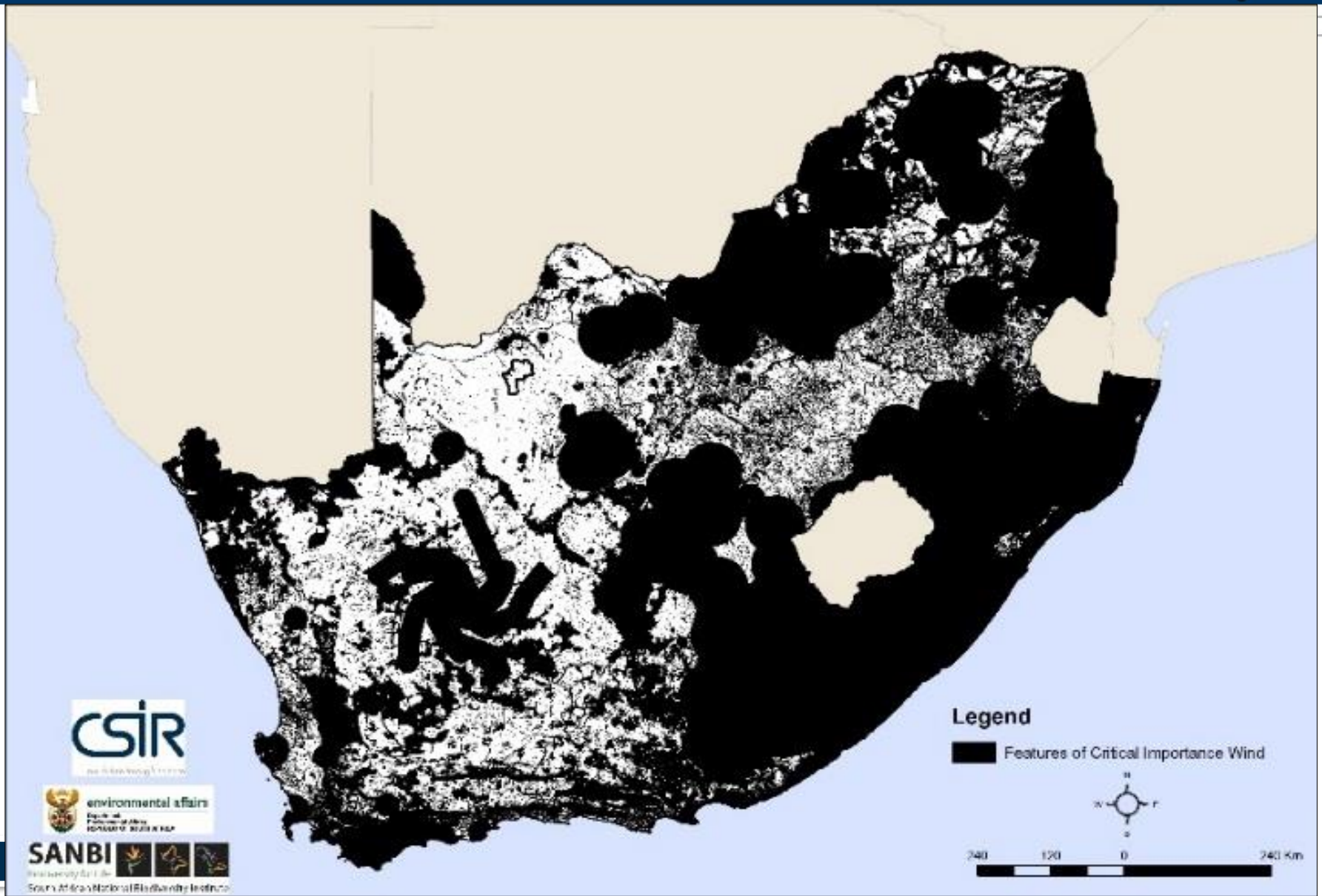
Features of critical importance

Criteria	Source	Features	Wind Buffers	Solar Buffers
Protected Areas	South African Protected Areas Database (SAPAD) - Q1, 2017 , South African National Parks (SANParks) and Provincial.	Marine Protected Areas		
		National Parks	0-5 km	0-2.5 km
		Nature Reserves	0-3 km	0-1.5 km
		World Heritage Sites (Core)	0-5 km	0-2.5 km
		Mountain Catchment Areas (Natural)		
		Protected Environments (Natural)	0-3 km	0-1.5 km
		Forest Nature Reserve	0-3 km	0-1.5 km
		Forest Wilderness Area	0-3 km	0-1.5 km
		Special Nature Reserve	0-3 km	0-1.5 km
Critical Biodiversity Areas (CBAs)	Provinces	CBA1 only		
Large Water features	NFEPA	Wetlands (500m) and Major Rivers(32m)	0-1 km	0-500 m
	CSIR	Estuaries, lagoons, lakes, state dams	0-1 km	0-500 m
	CSIR	SWSAs (Natural)		
Coastline			0-1 km	0-1 km
SA Large Telescope	SALT	Exclusion area	0-25 km	0-15 km
Square Kilometre Array (SKA) Area	SKA	SKA study Area		
Heritage	SAHRA	All grades and declared sites (add UNESCO sites)	0-1 km	0-1 km
Steep slopes > 25% (1:4)				
Towns, settlements			0-2 km	0-500 m
Major airports			0-8 km	
Small airfields, landing strips			0-3 km	
National roads			0-1 km	0-500 m
Main Passenger Rail Lines			0-1 km	0-500 m
Scenic routes and passes	No data base			

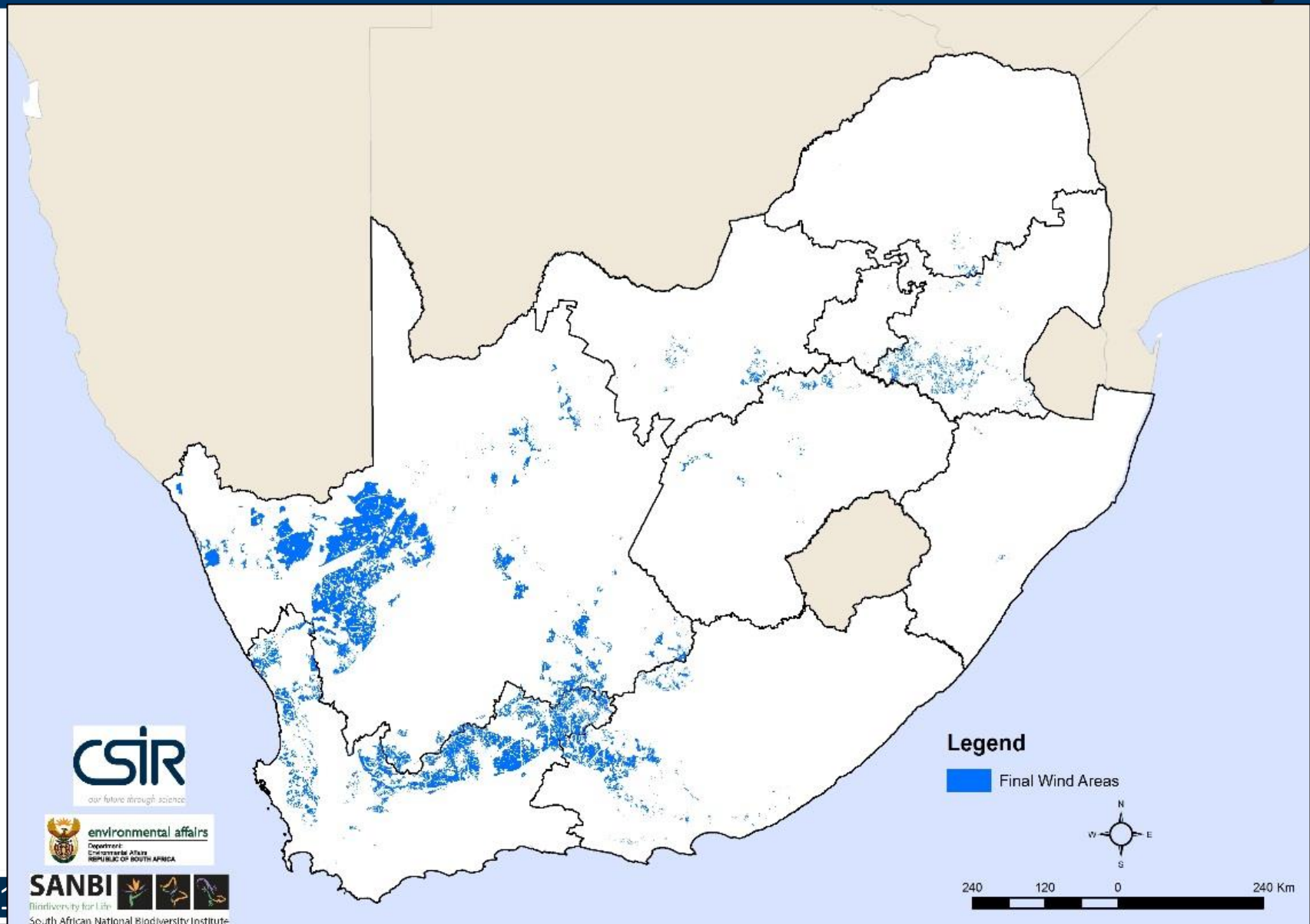
Features of Critical Importance – Solar PV



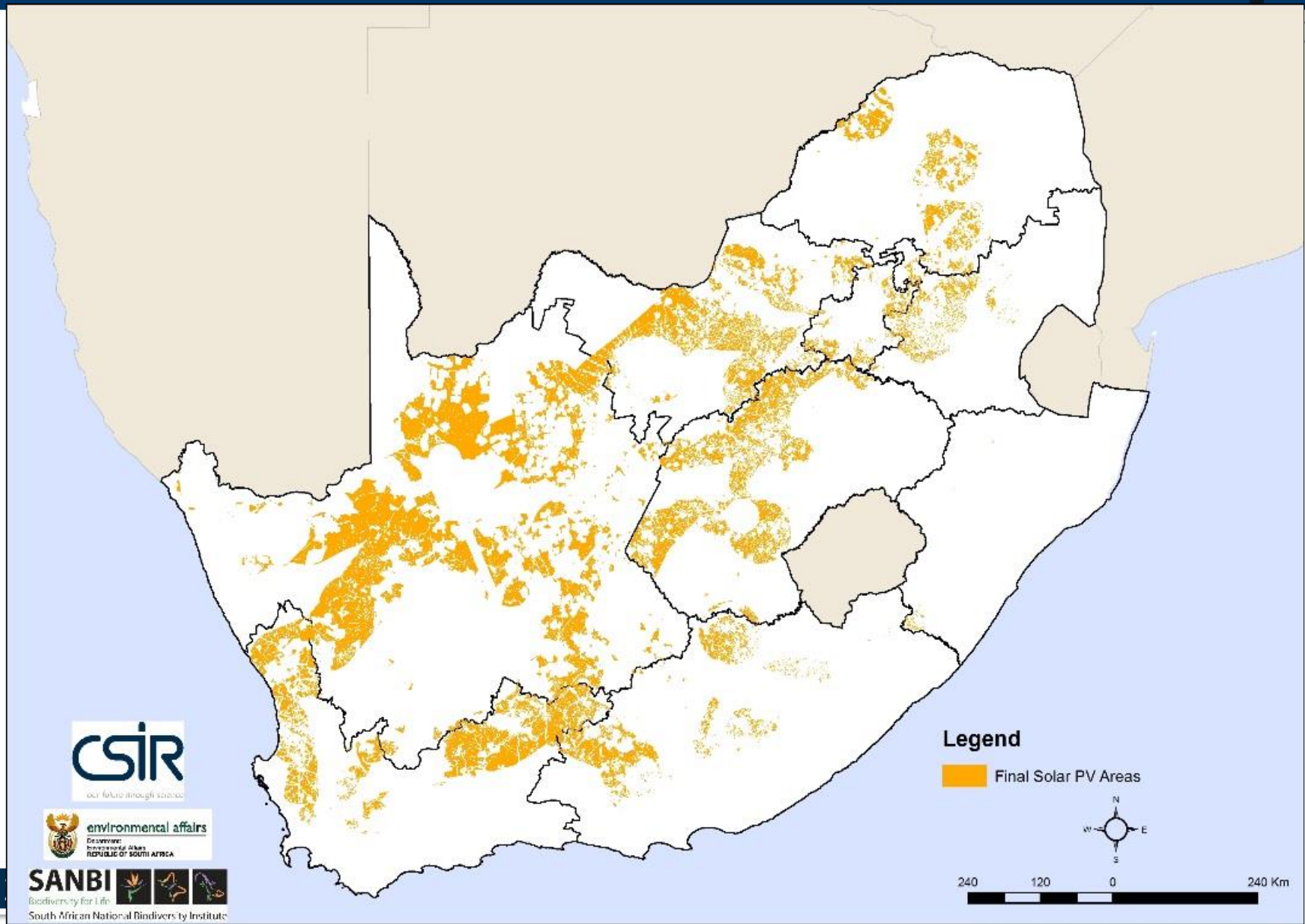
Features of Critical Importance – Wind



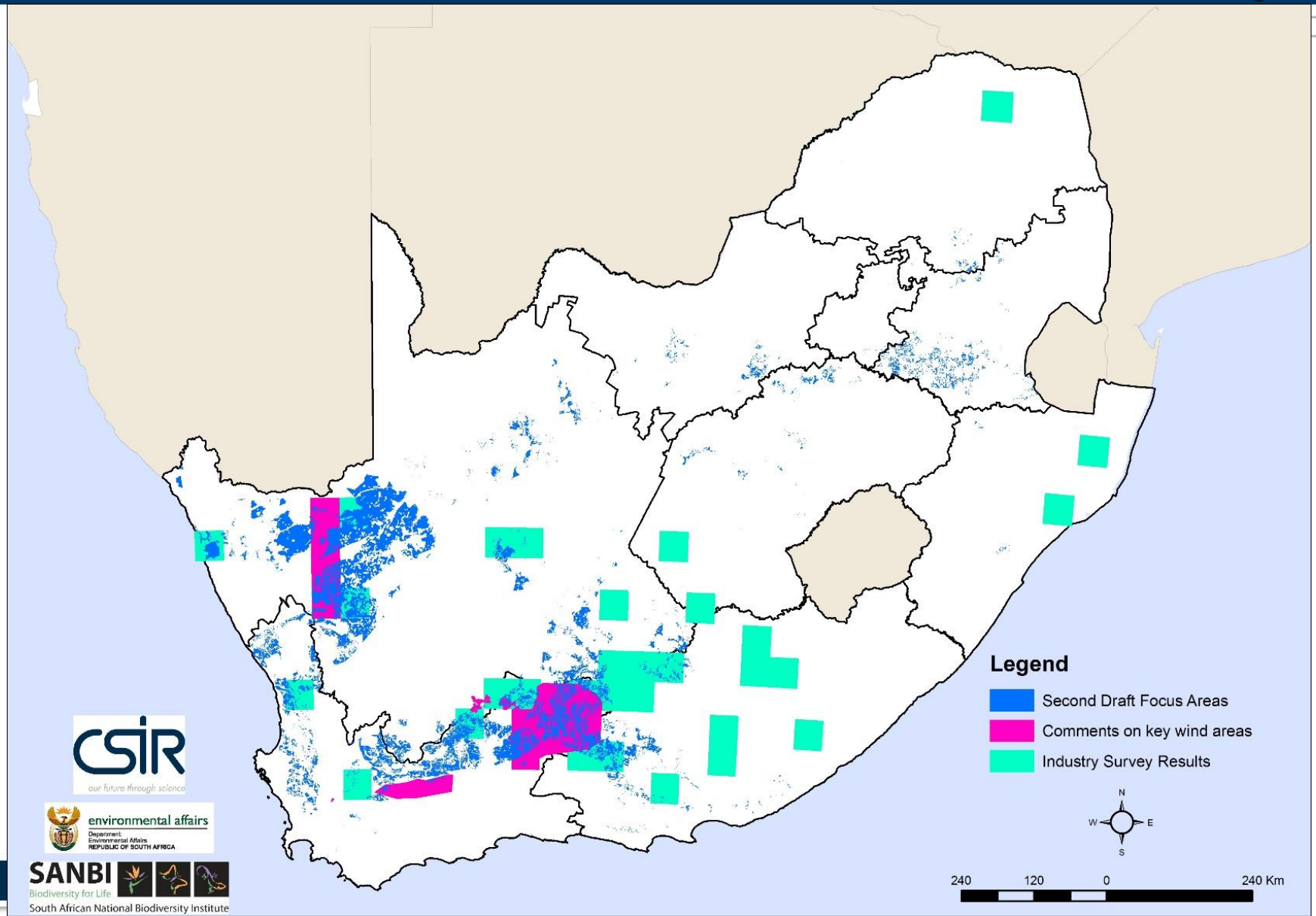
Second Draft Focus Areas -Wind



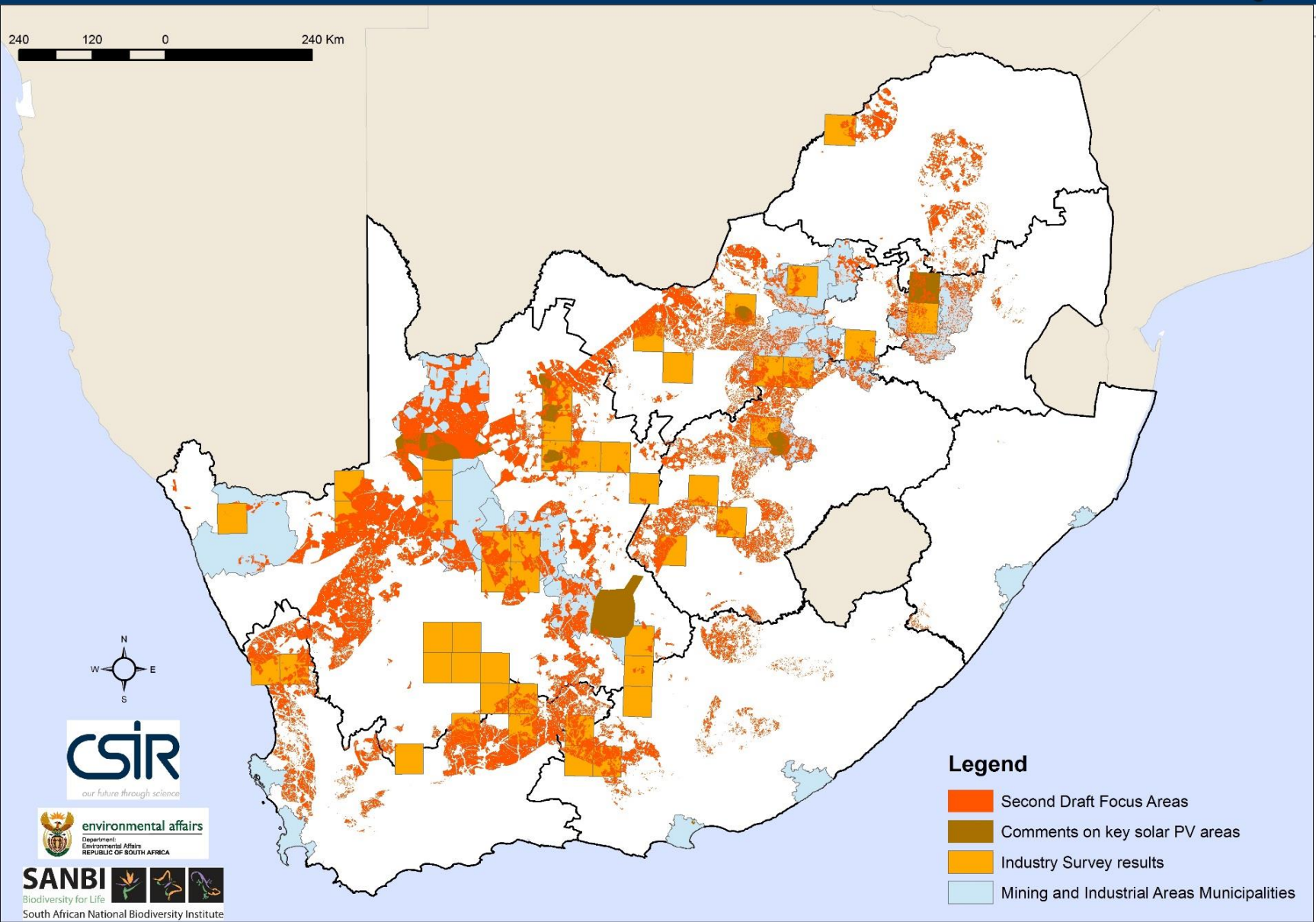
Second Draft Focus Areas –Solar PV



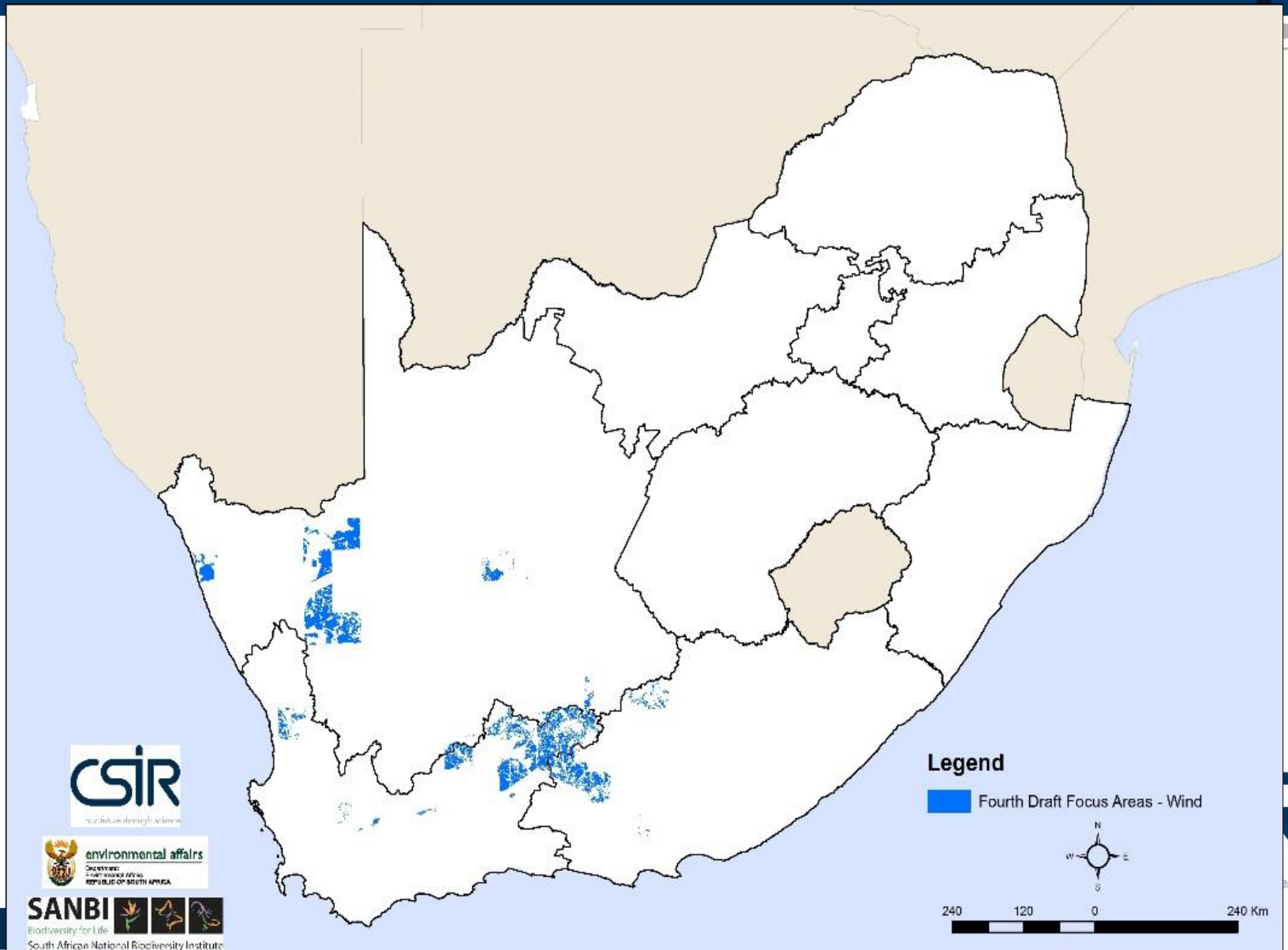
Industry survey results and comments from first draft focus areas - Wind



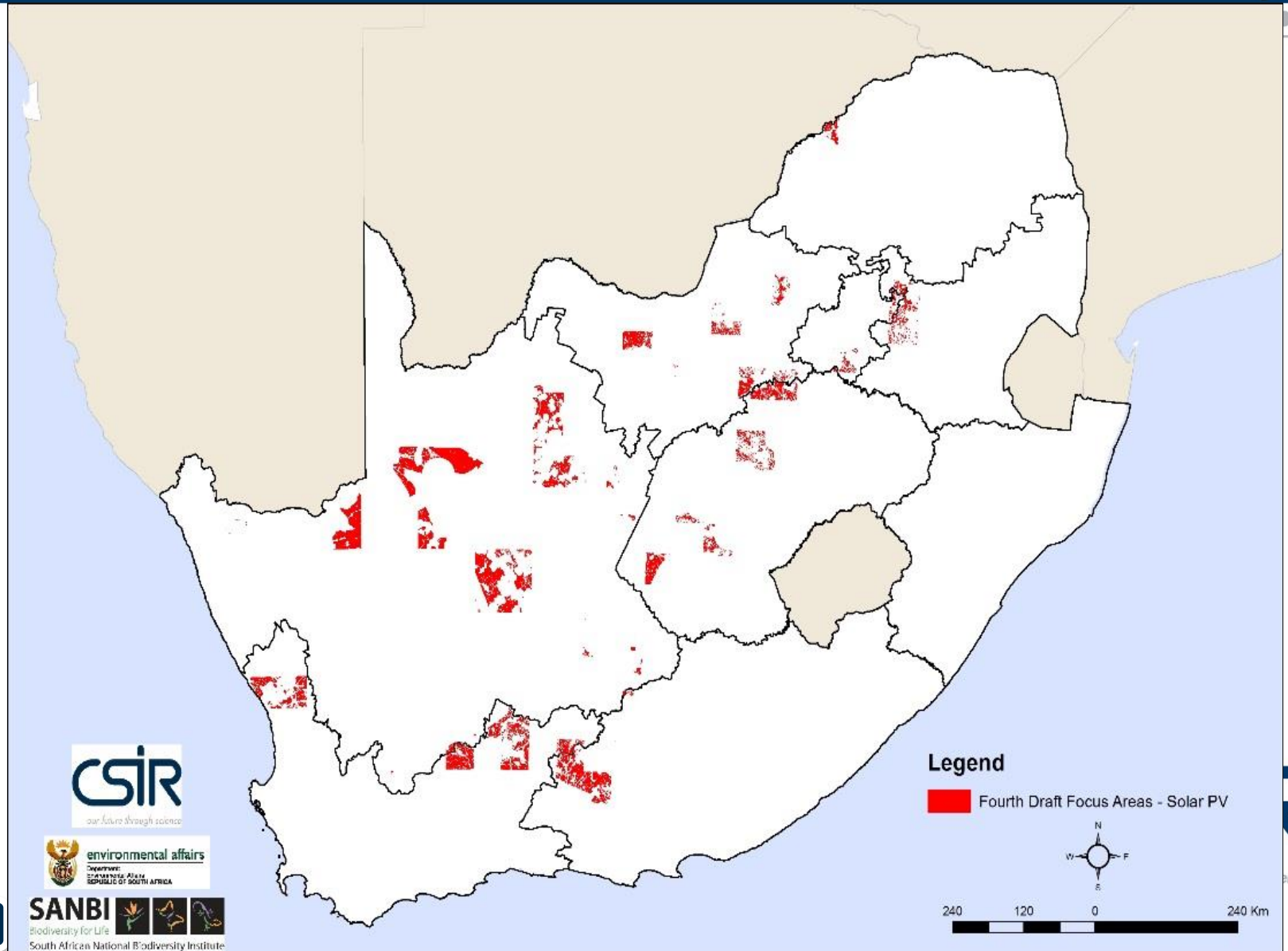
Industry survey results and comments from first draft focus areas – Solar PV



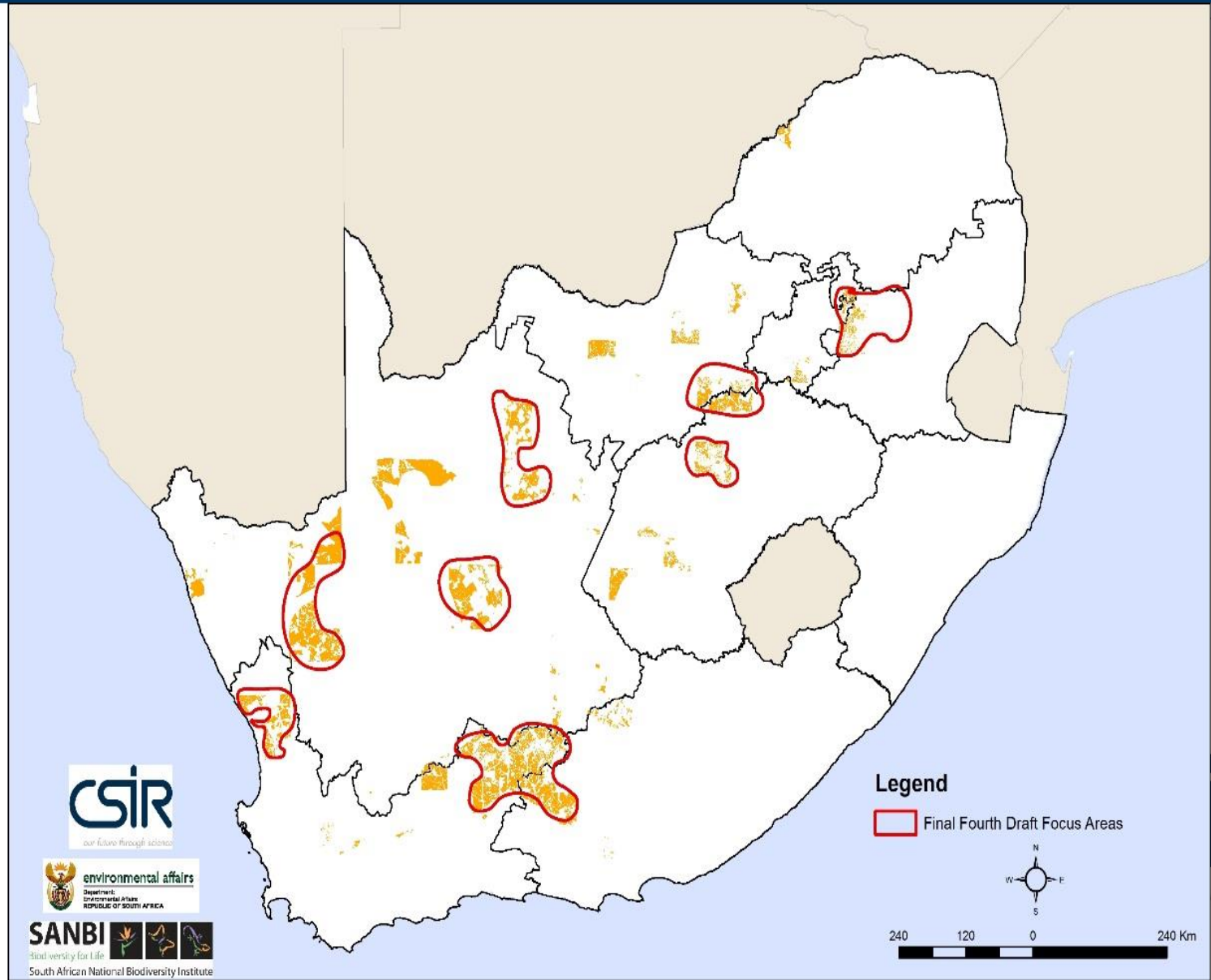
Third Draft Focus Areas -Wind



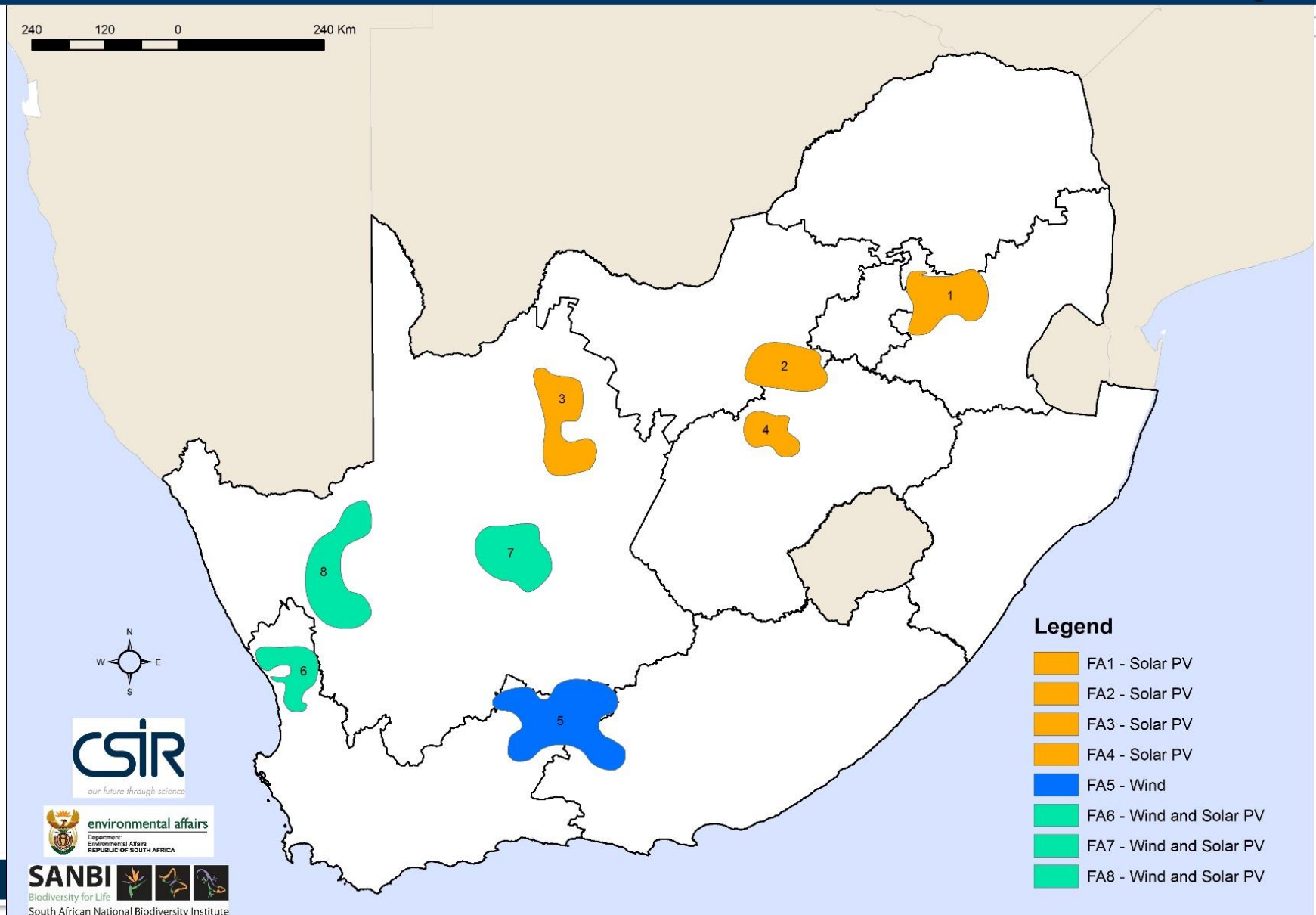
Third Draft Focus Areas –Solar PV



Focus Areas



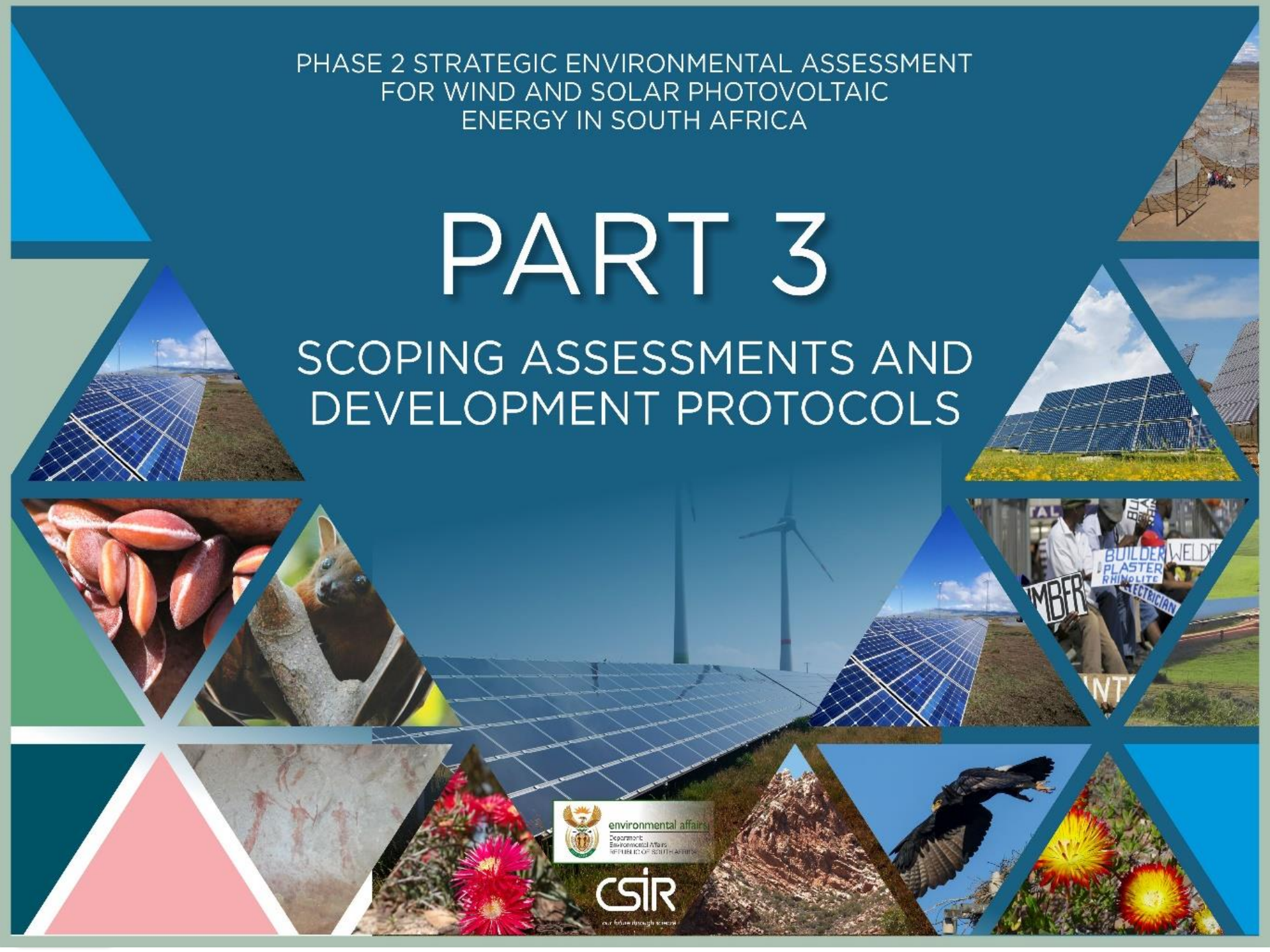
Focus Areas for assessment



PHASE 2 STRATEGIC ENVIRONMENTAL ASSESSMENT
FOR WIND AND SOLAR PHOTOVOLTAIC
ENERGY IN SOUTH AFRICA

PART 3

SCOPING ASSESSMENTS AND DEVELOPMENT PROTOCOLS



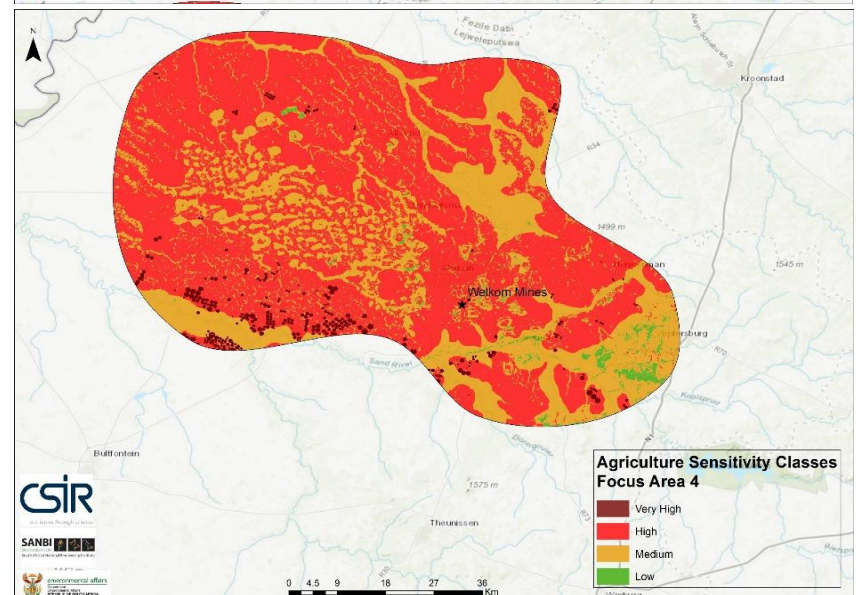
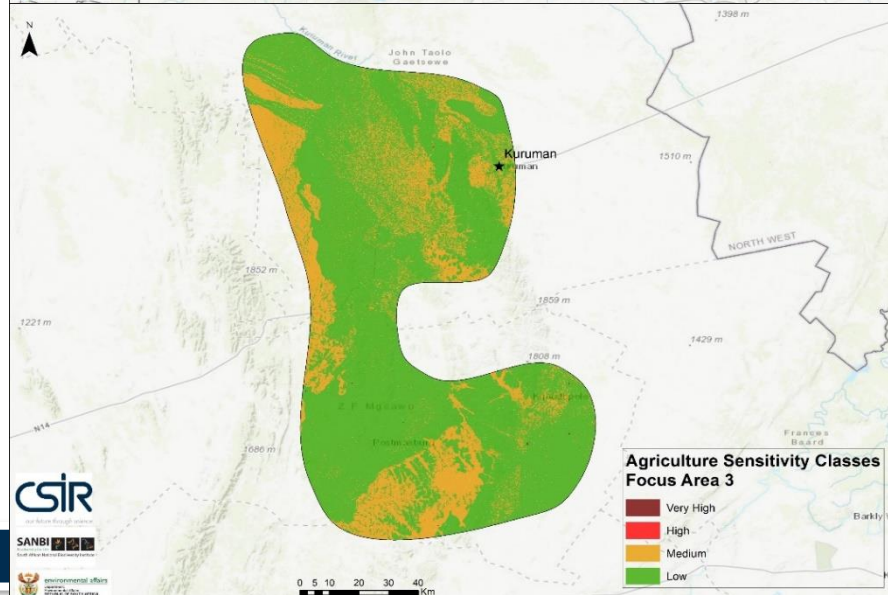
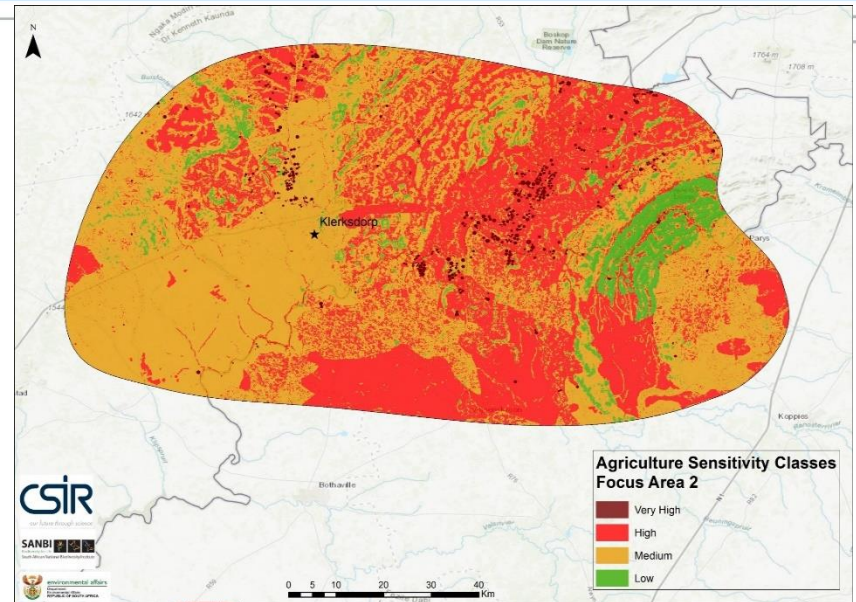
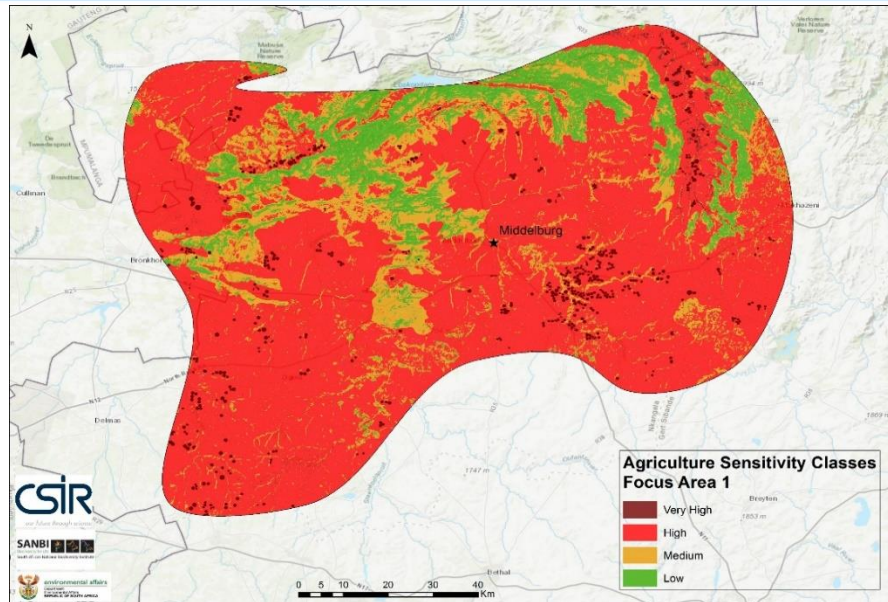
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Scoping Assessments and GIS Sensitivity Layers

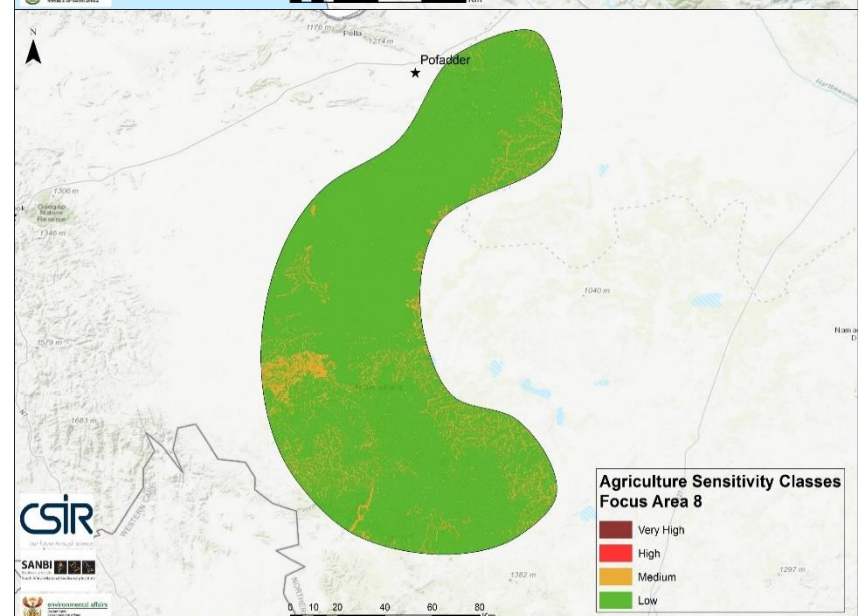
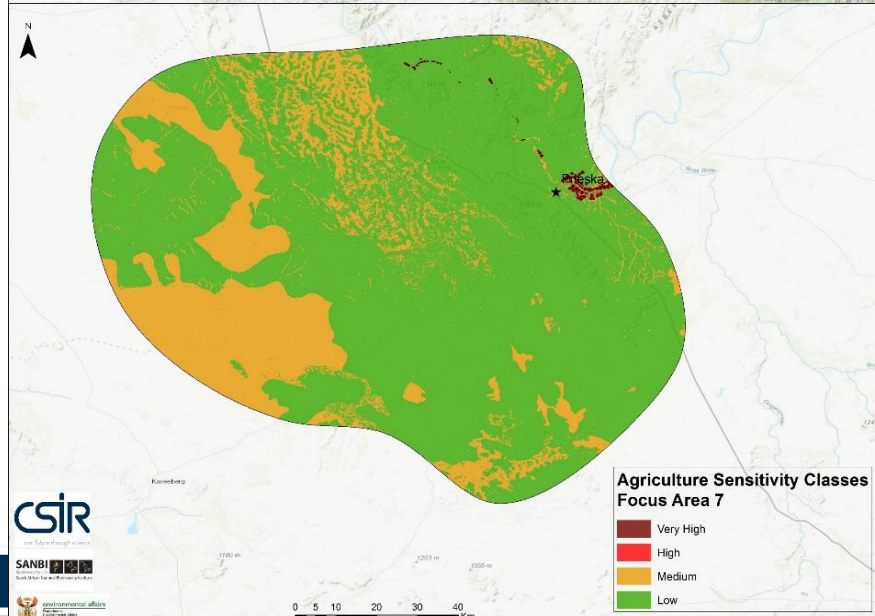
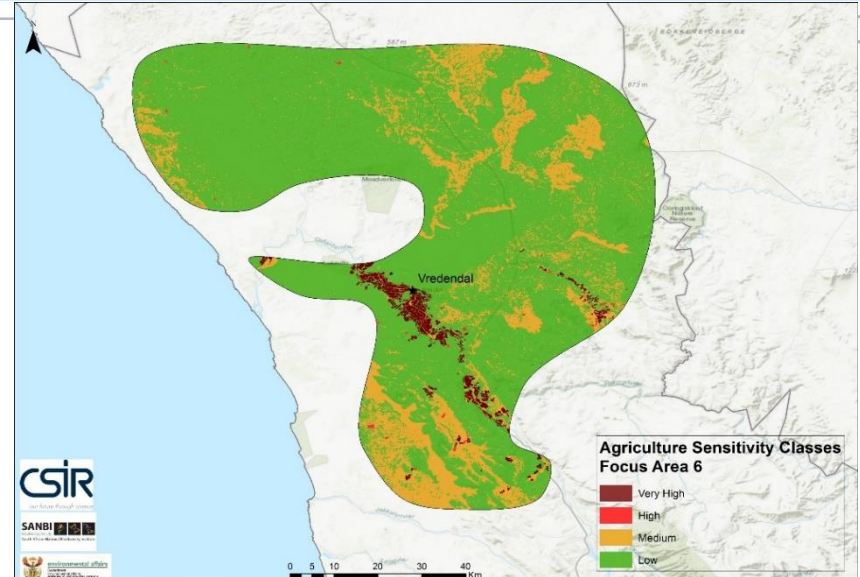
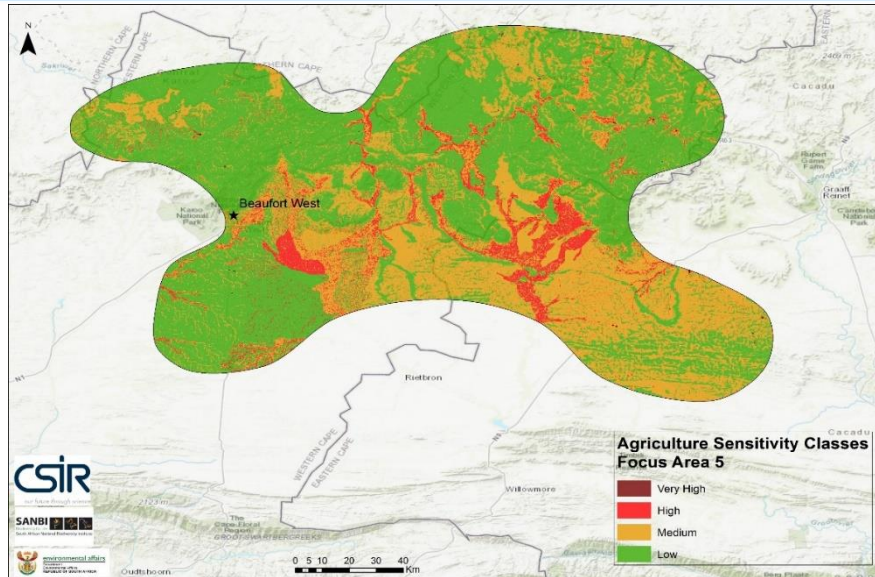
✓ Scoping Assessment in the 8 focus areas:

1. Agricultural Assessment
2. Bat Assessment
3. Bird Assessment
4. Heritage Assessment
5. Visual Assessment
6. Biodiversity
7. SKA
8. Weather
9. Telecommunications
10. Civil Aviation
11. Defence
12. Noise

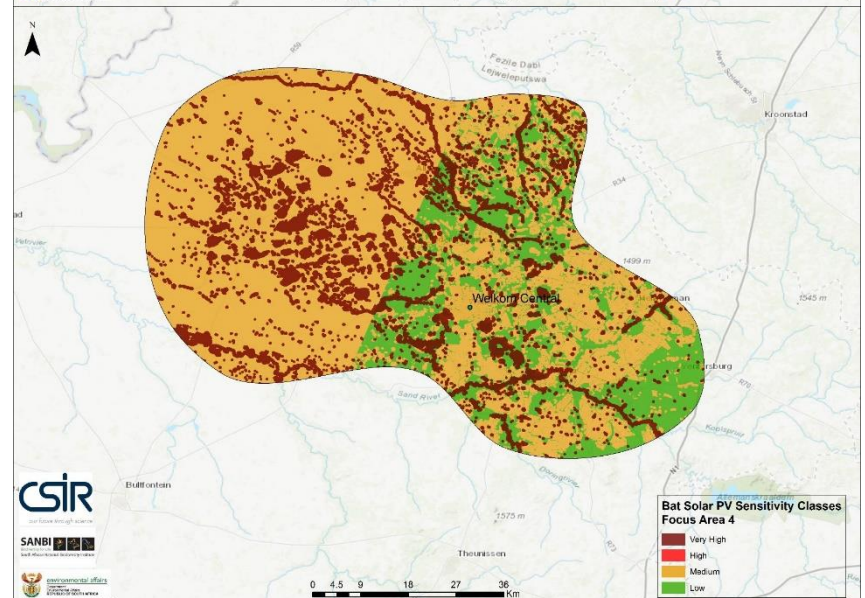
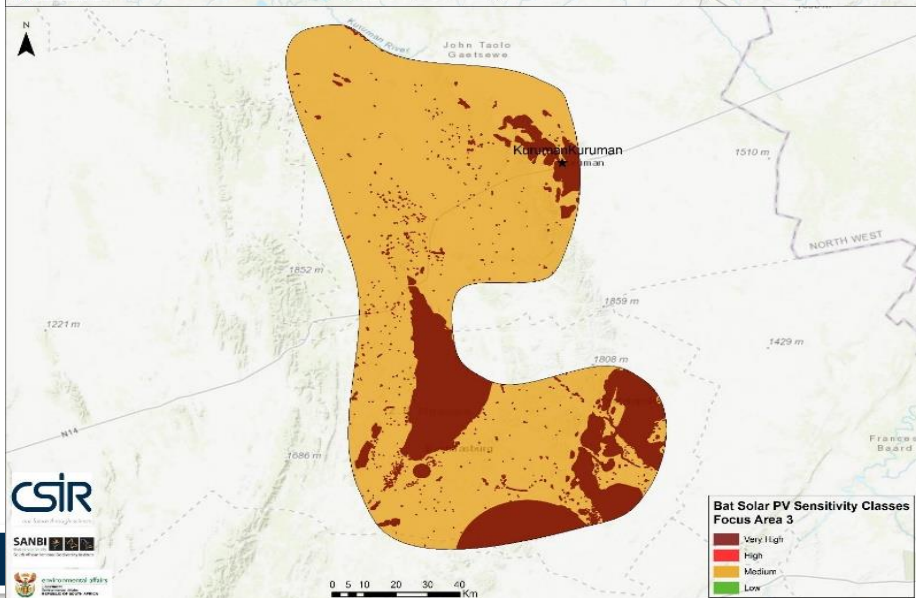
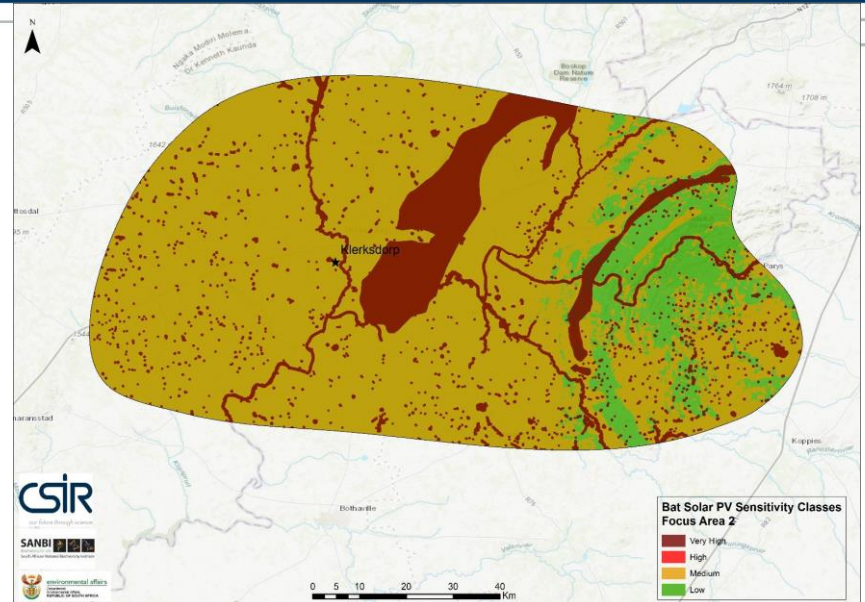
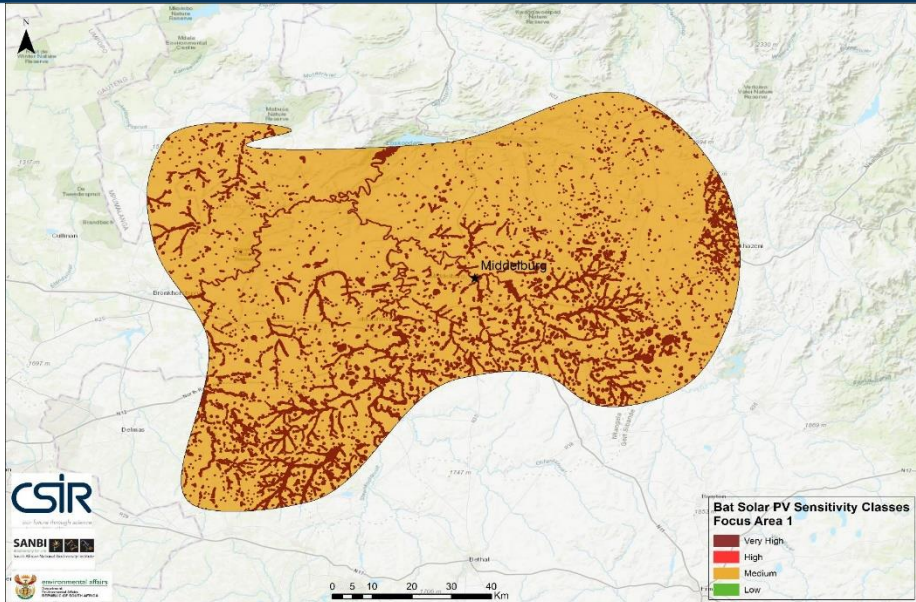
Agriculture



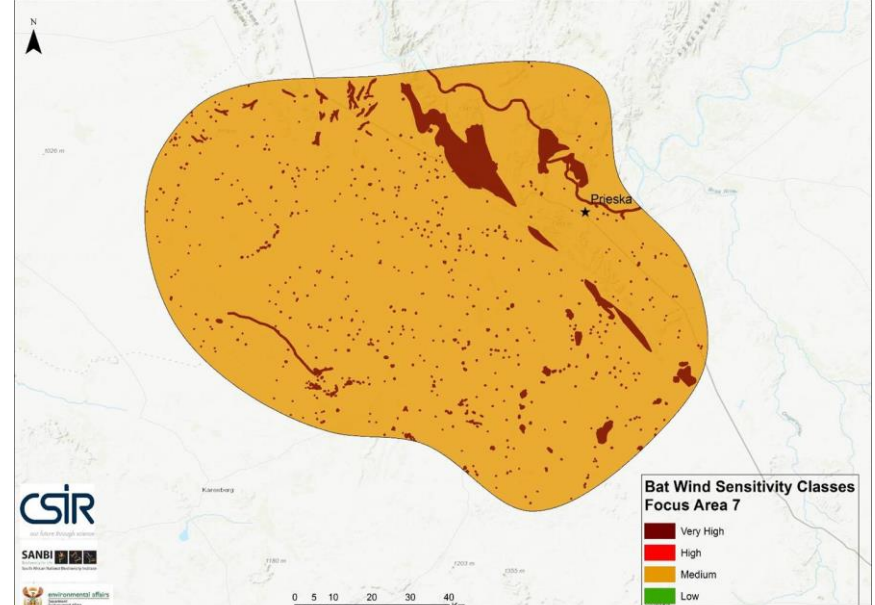
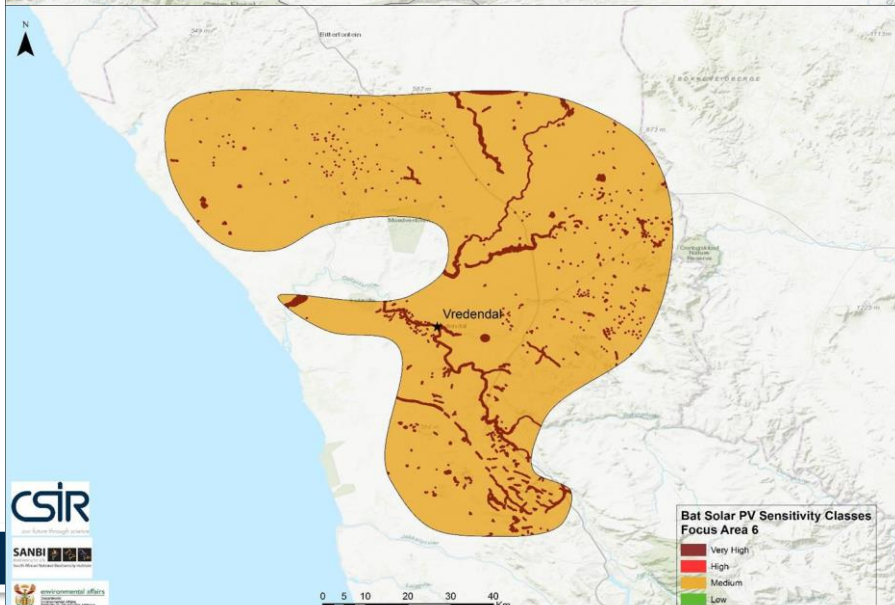
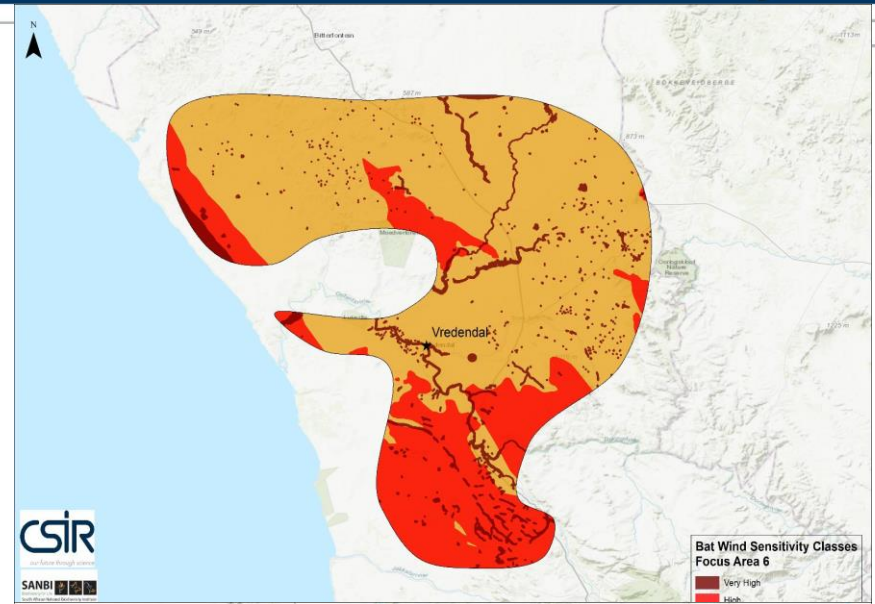
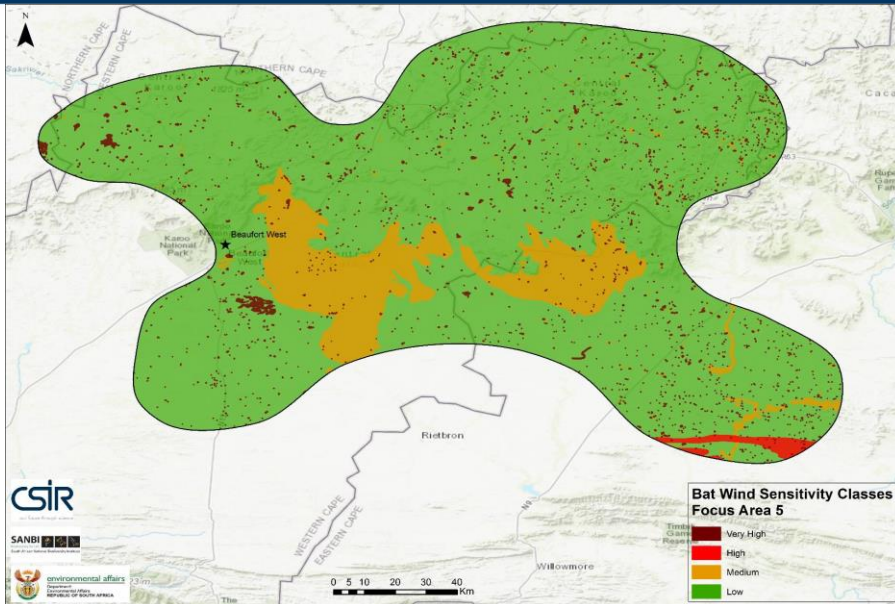
Agriculture



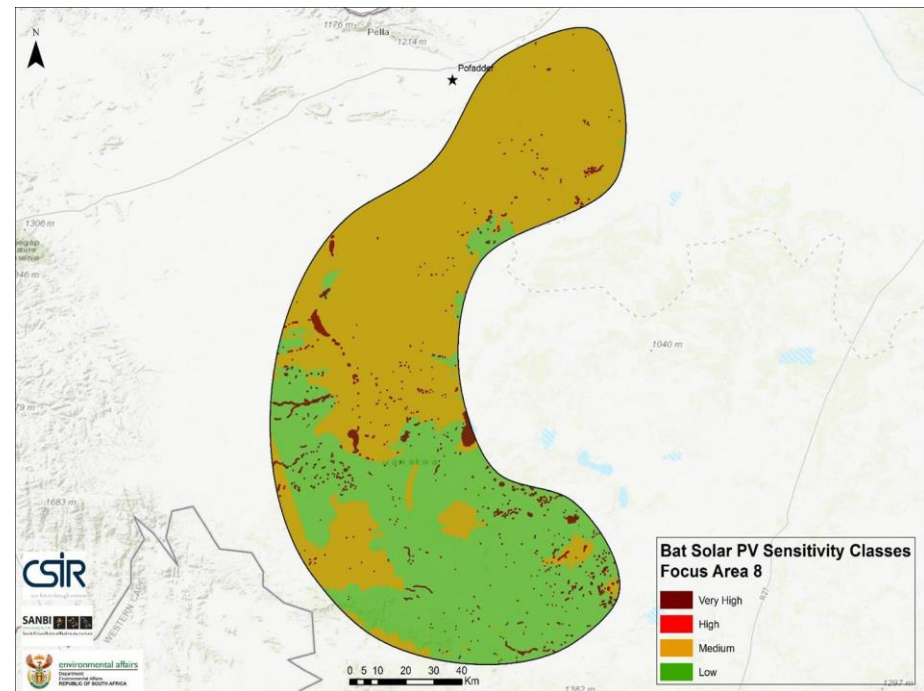
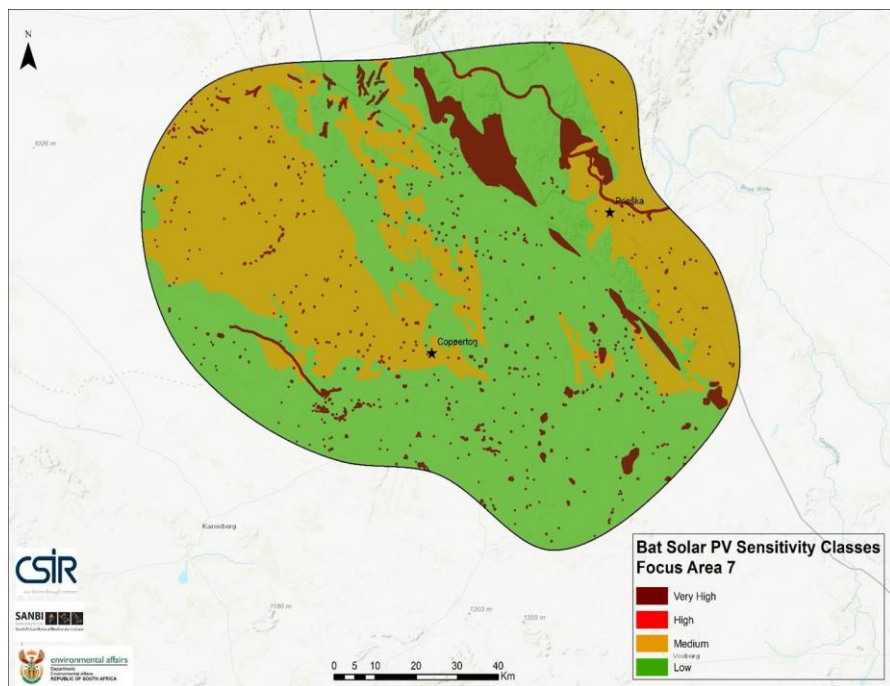
Bats



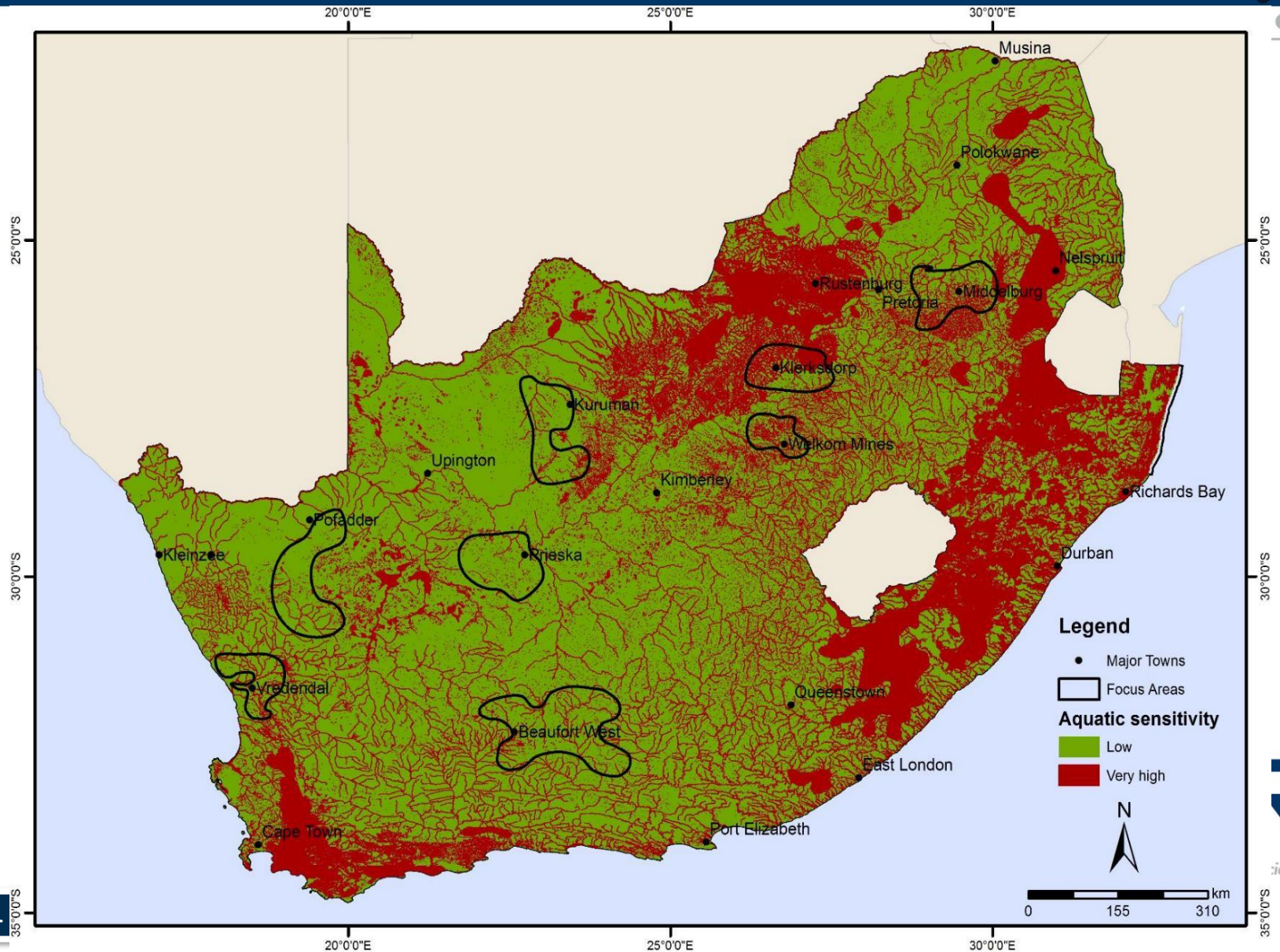
Bats



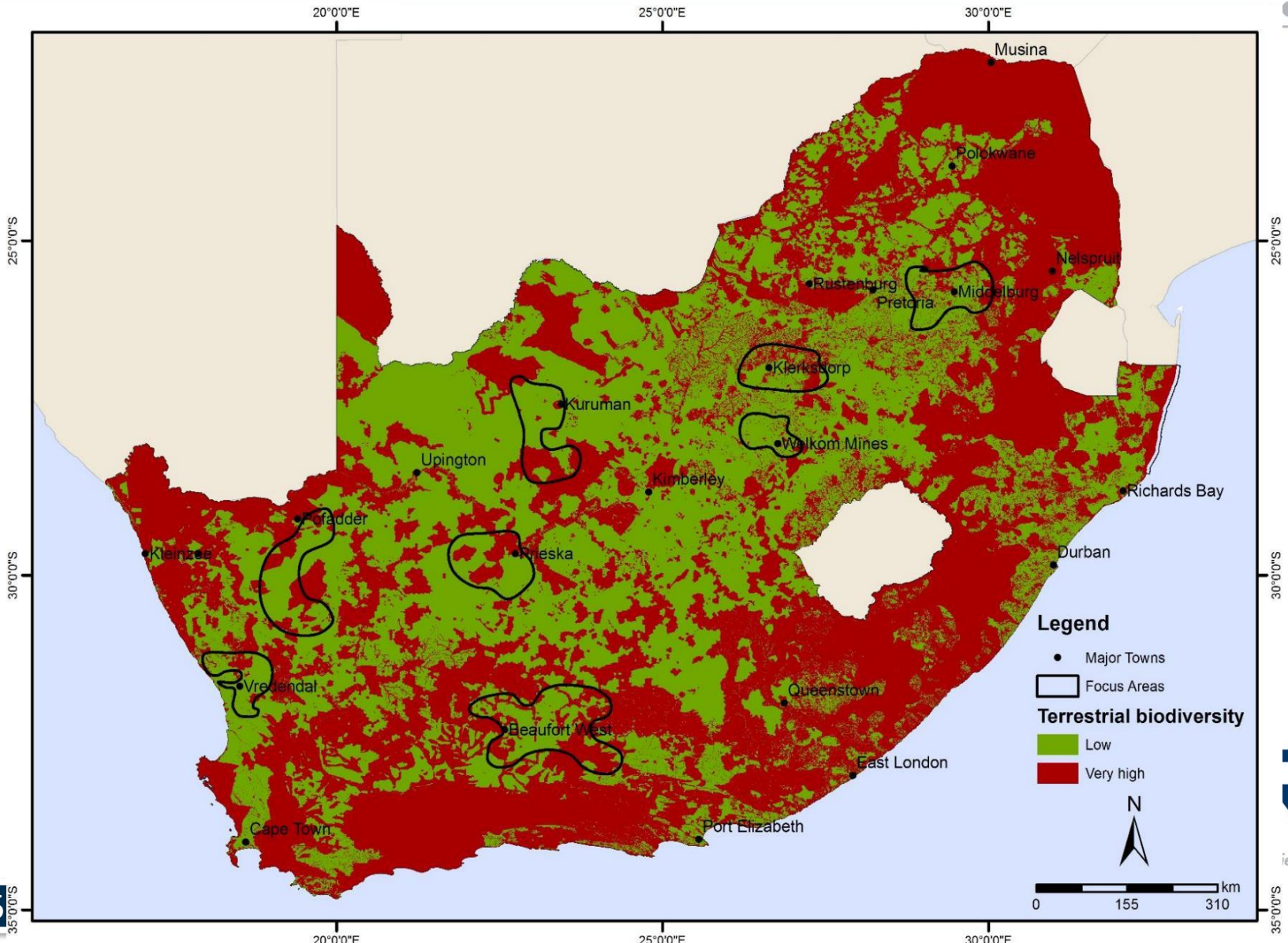
Bats



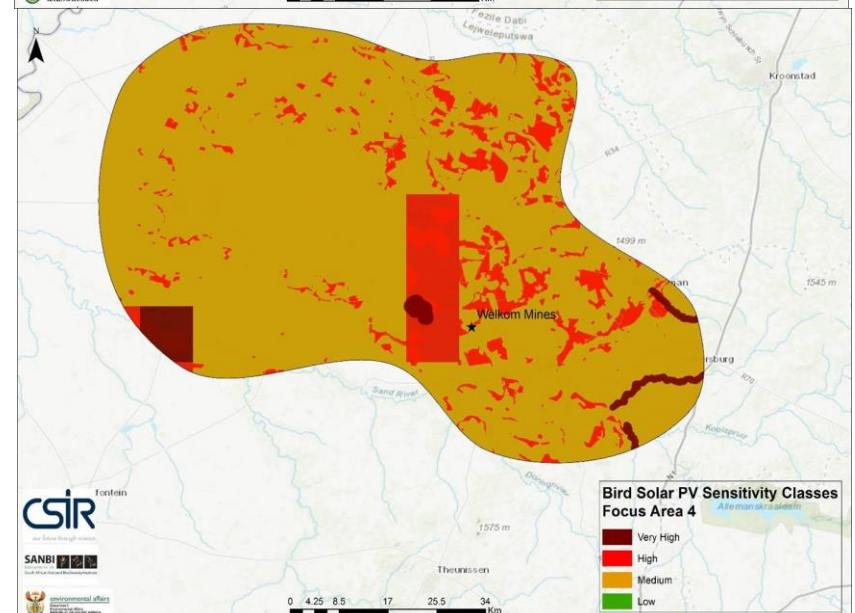
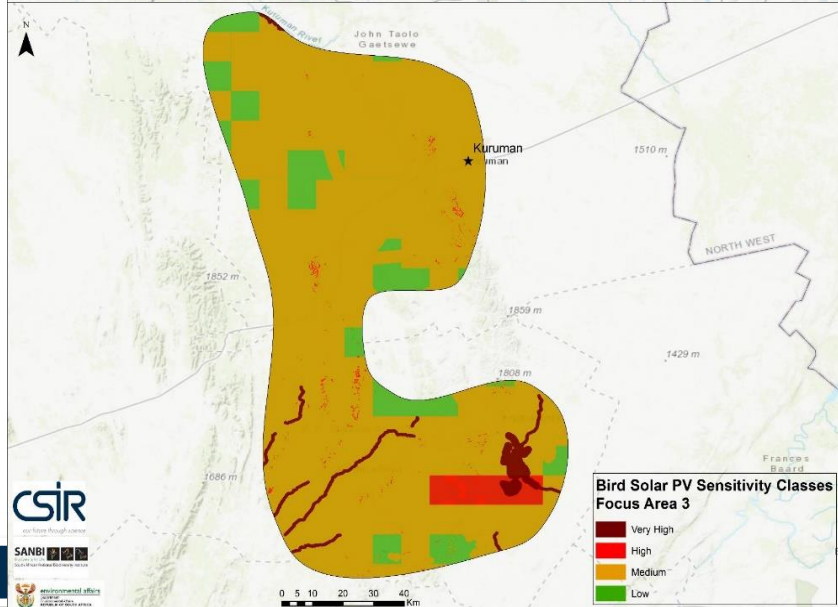
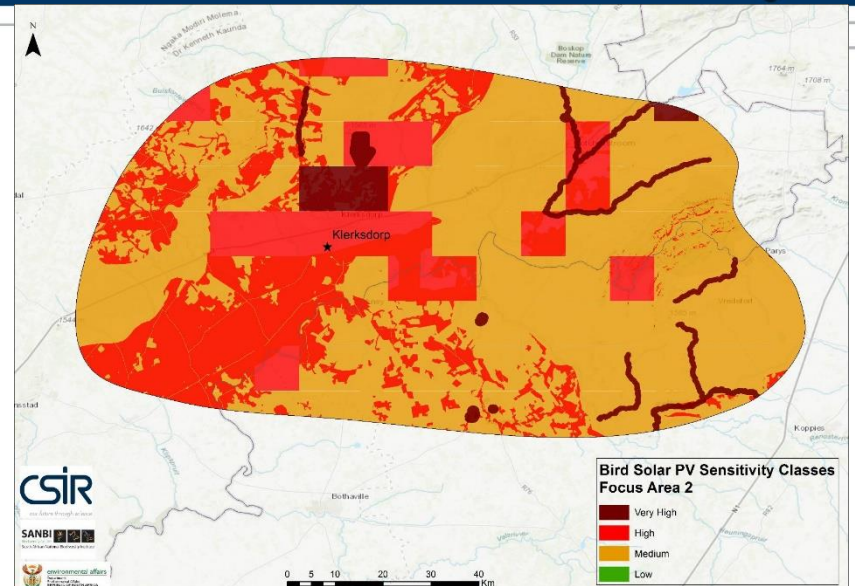
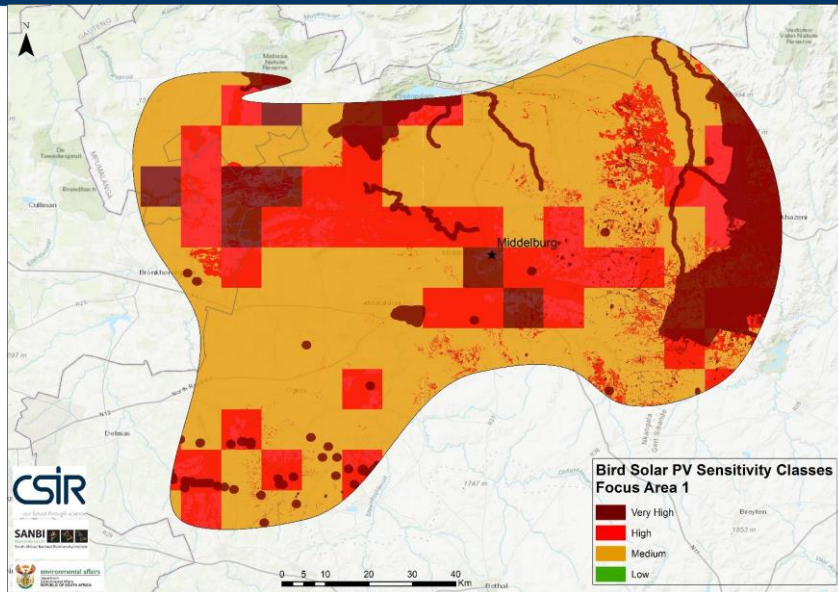
Aquatic Biodiversity



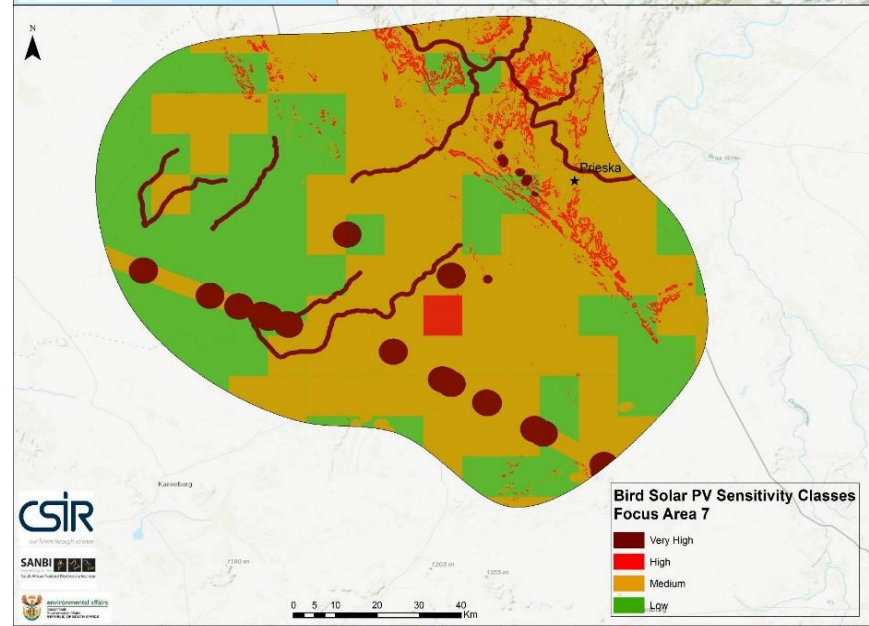
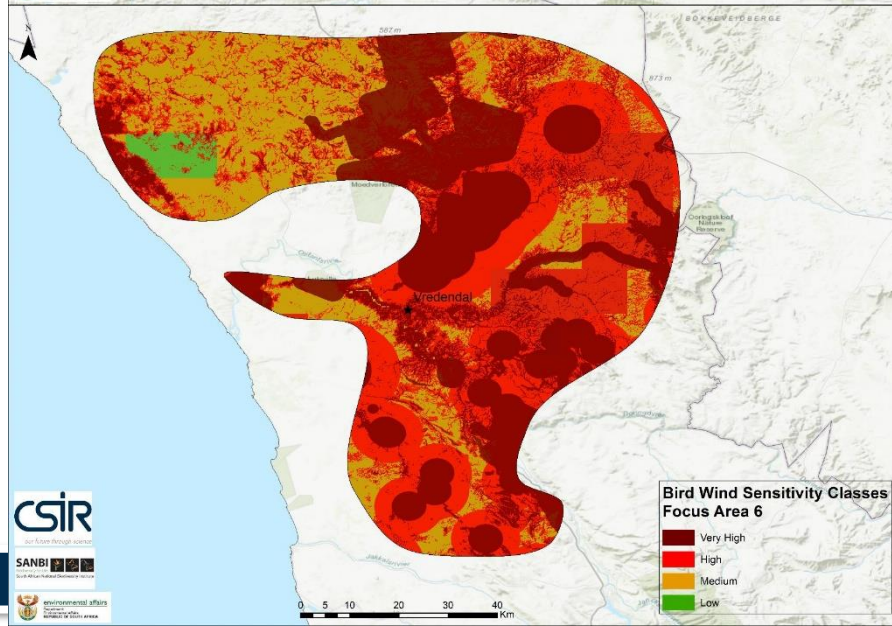
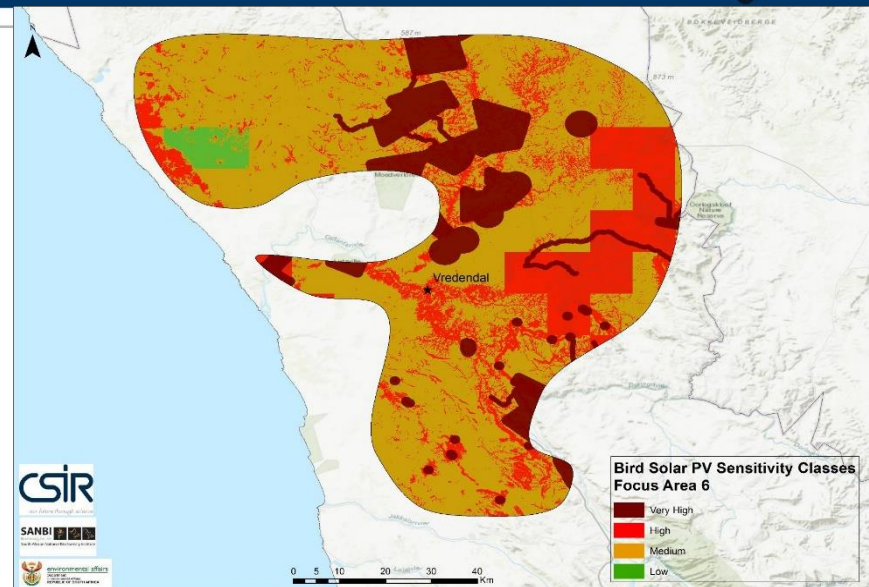
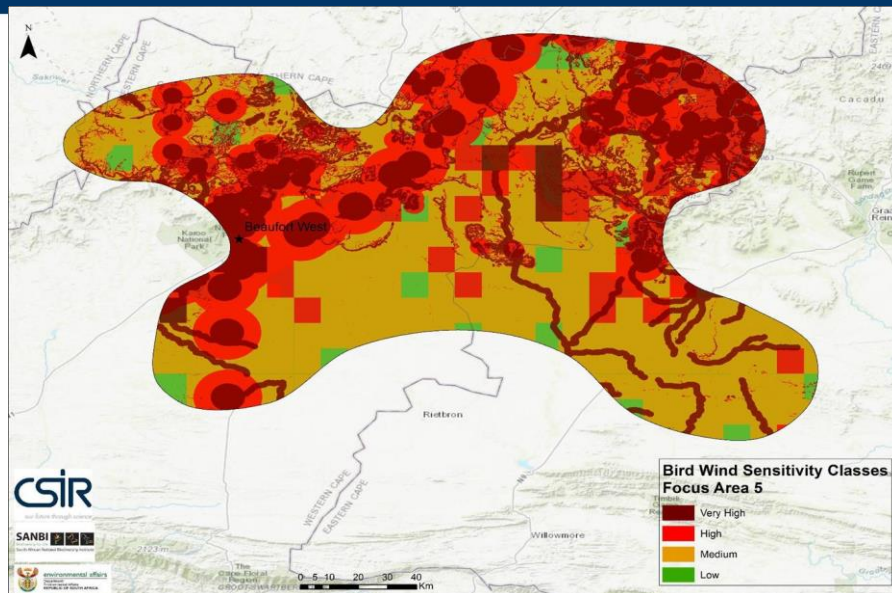
Terrestrial Biodiversity



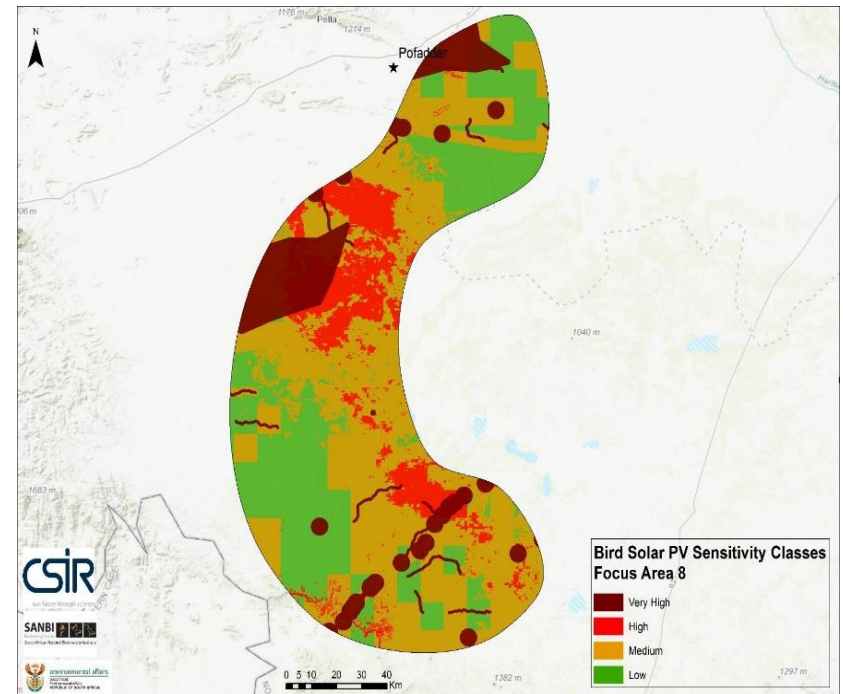
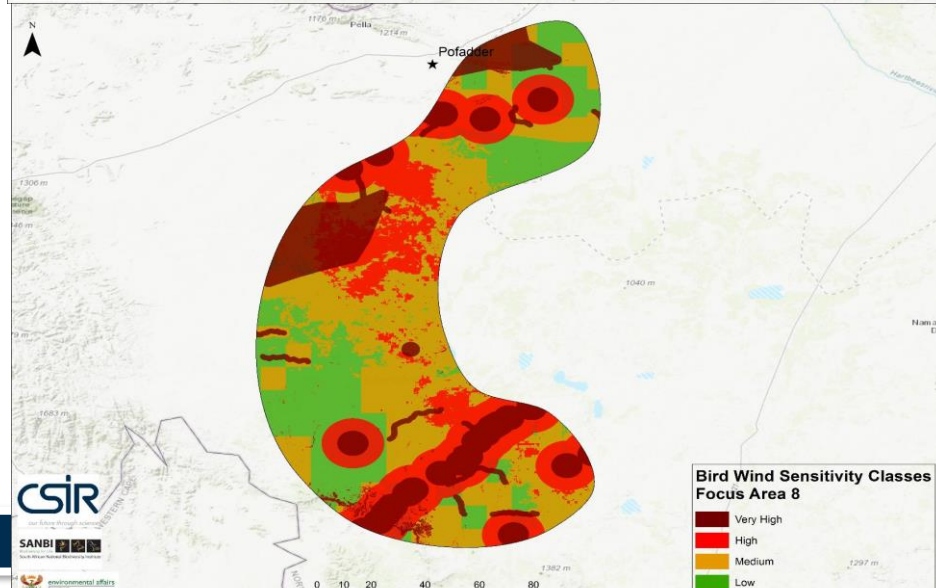
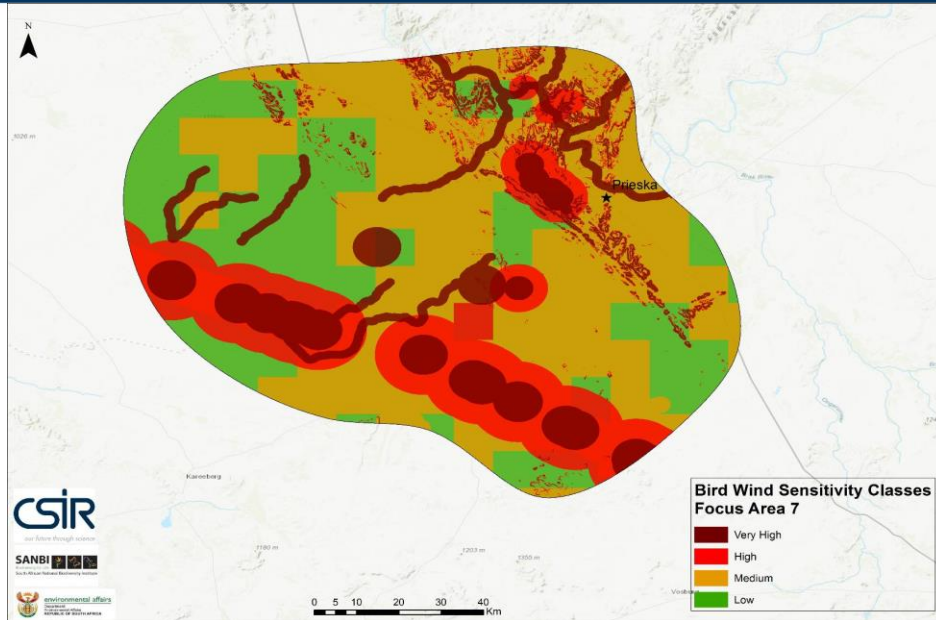
Birds



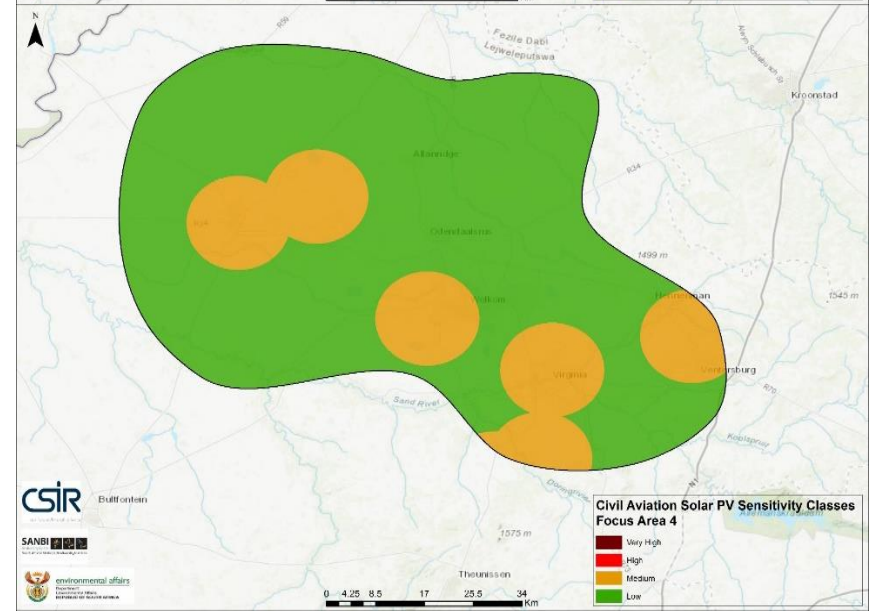
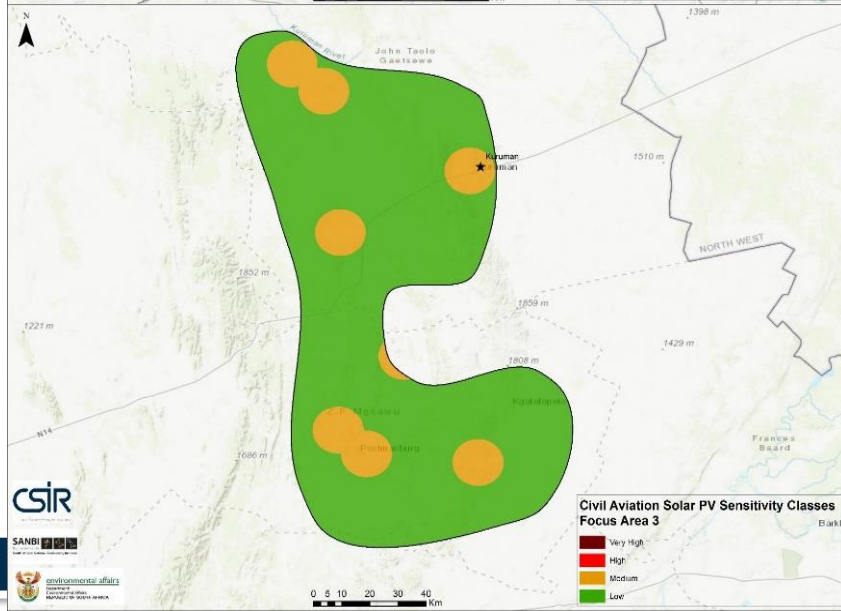
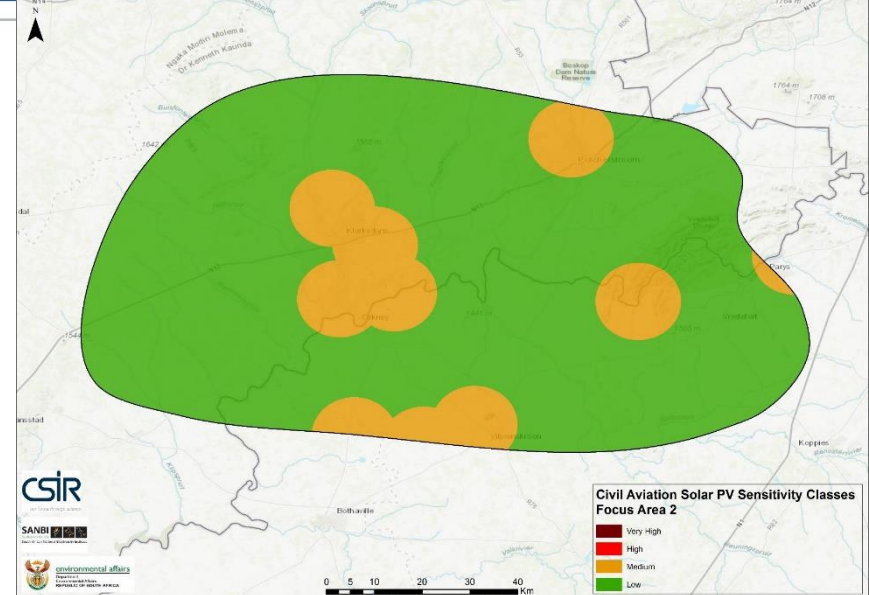
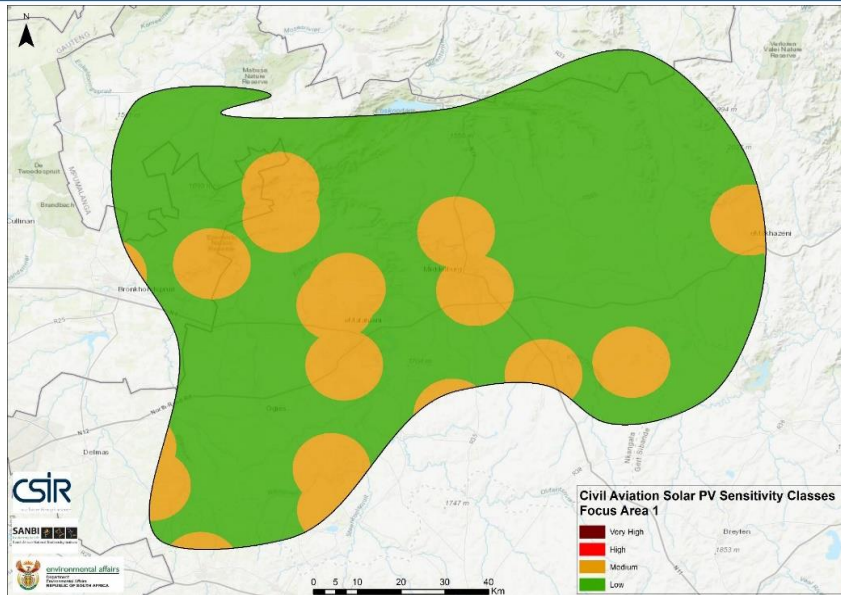
Birds



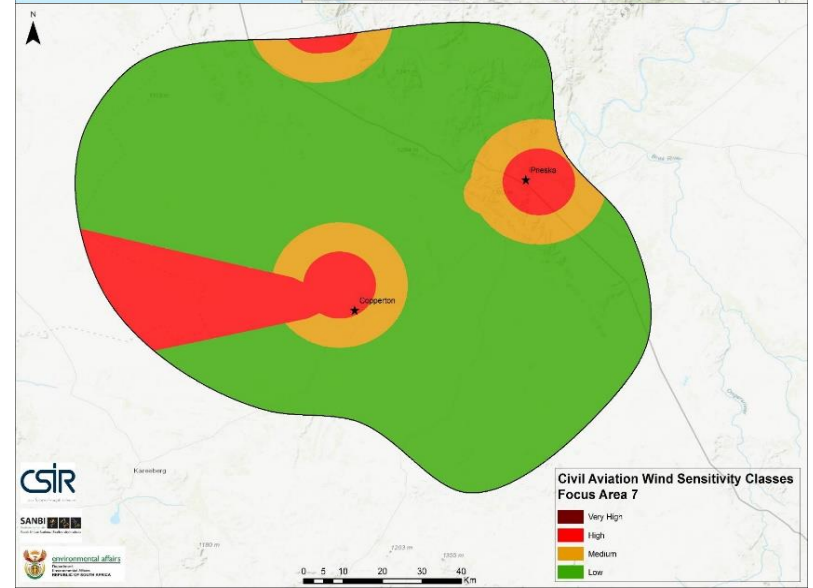
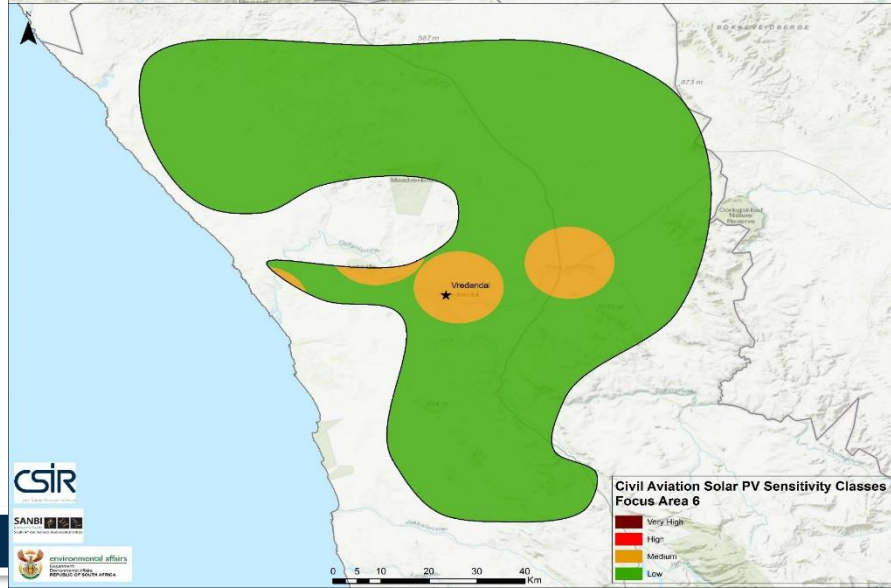
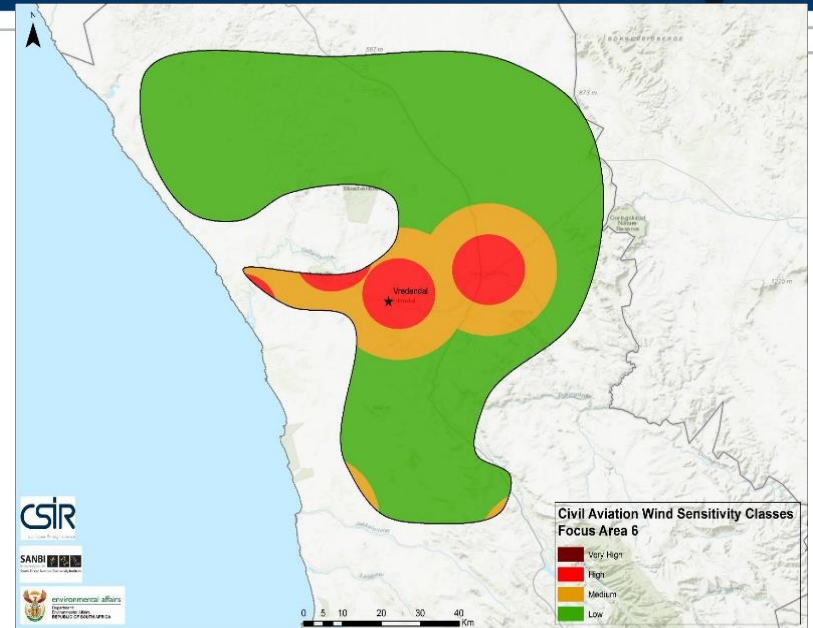
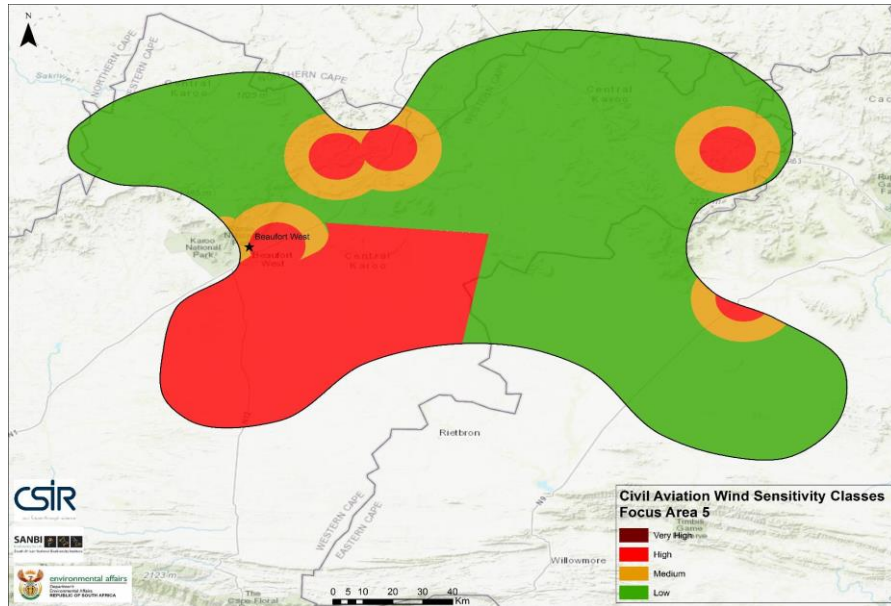
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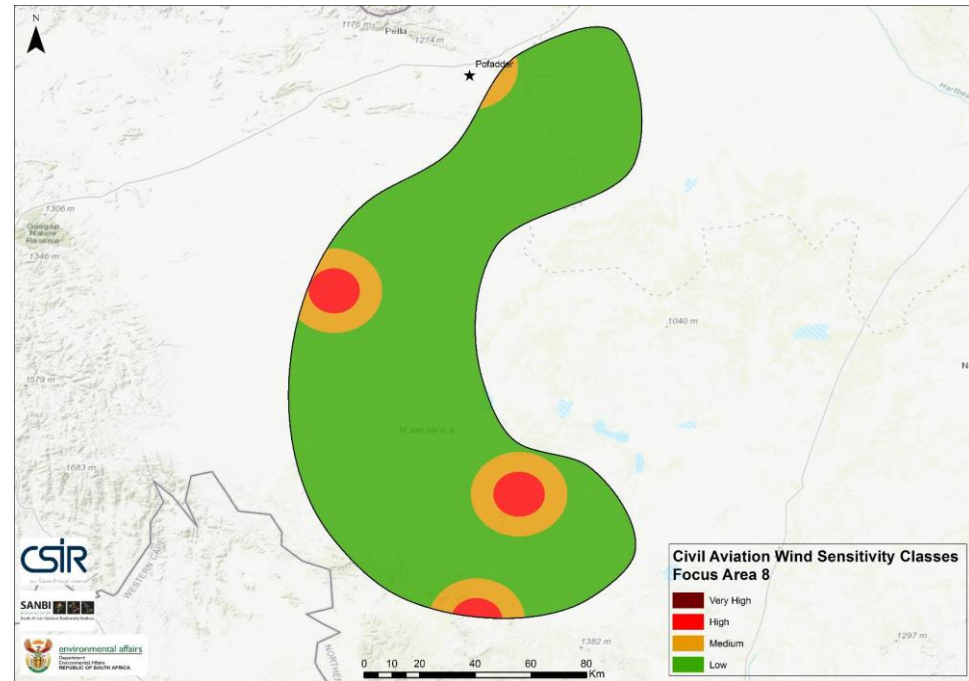
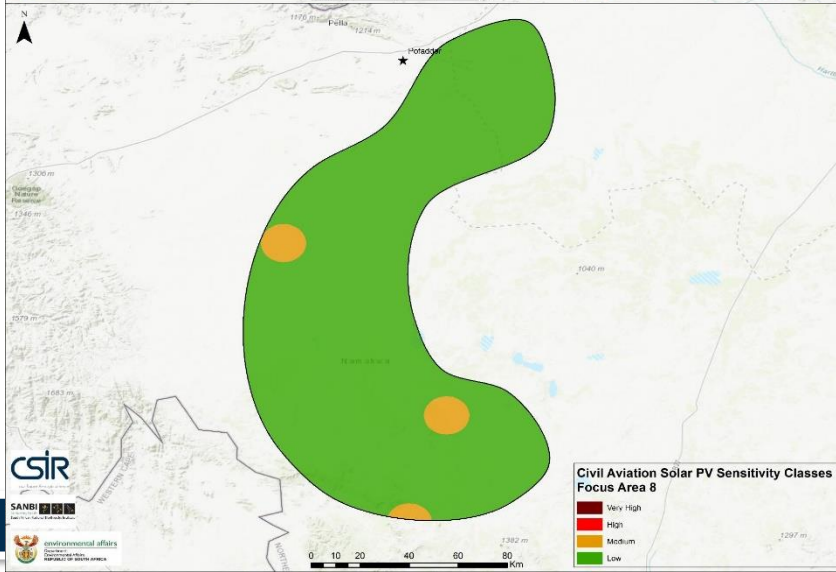
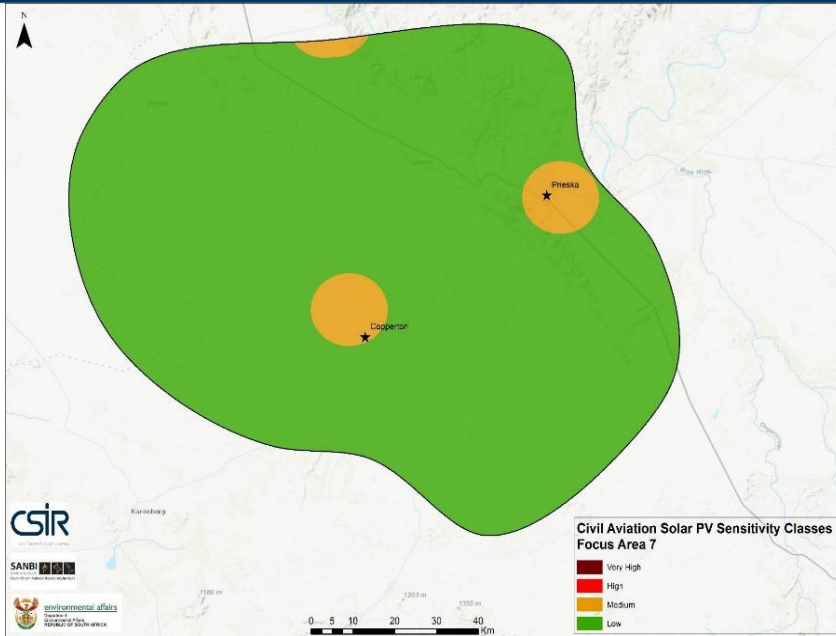
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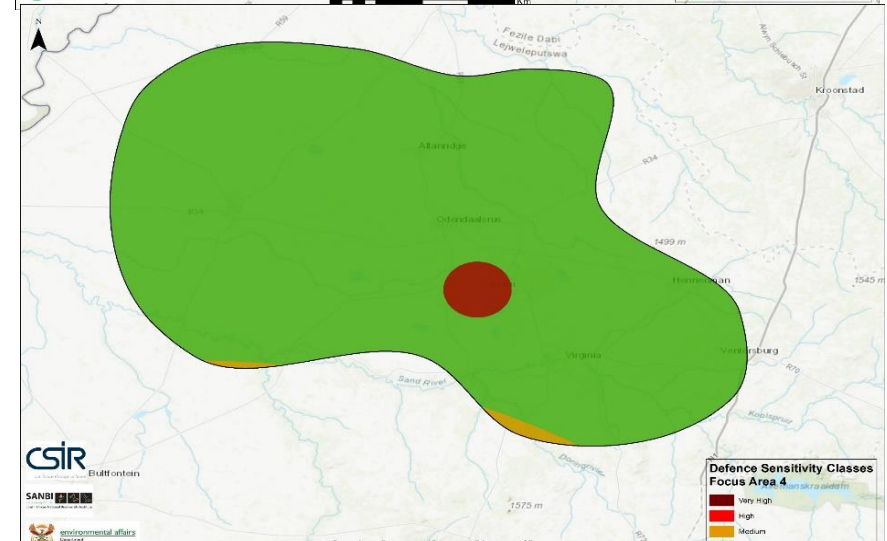
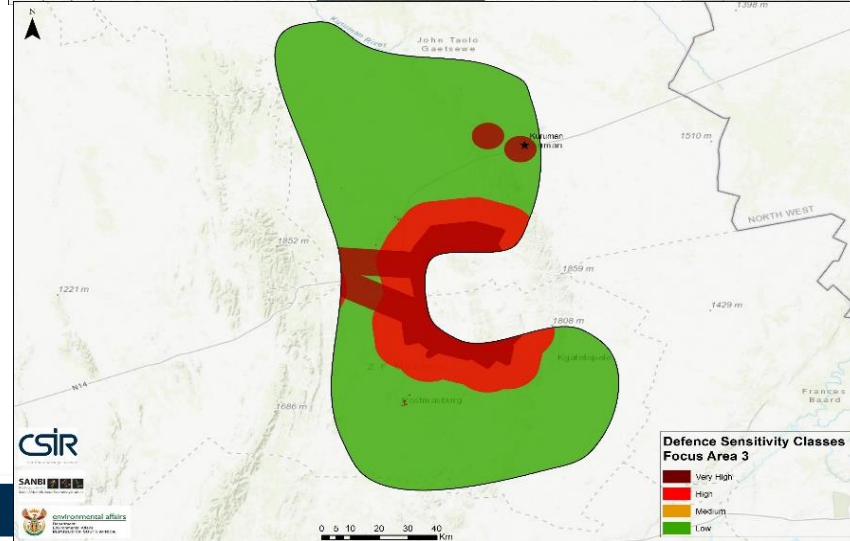
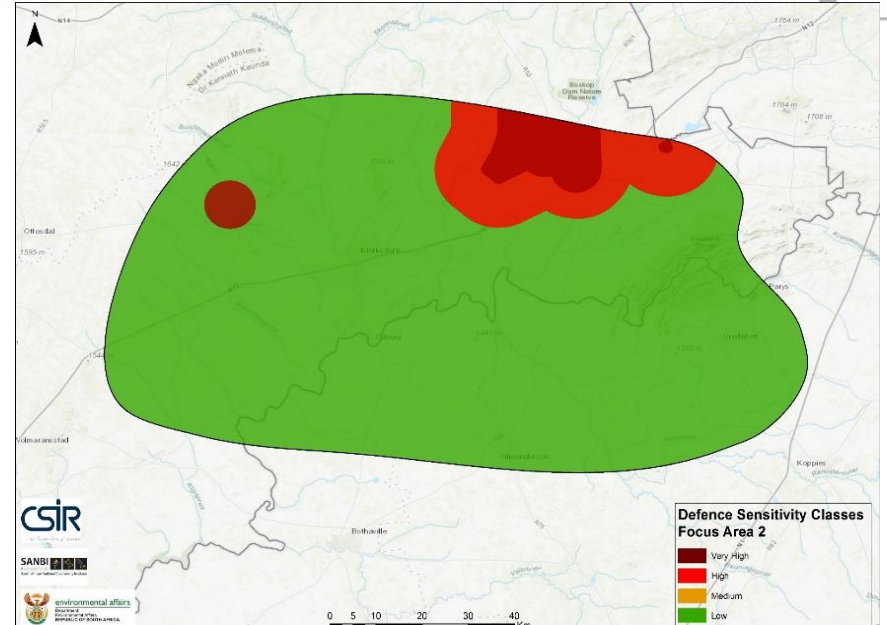
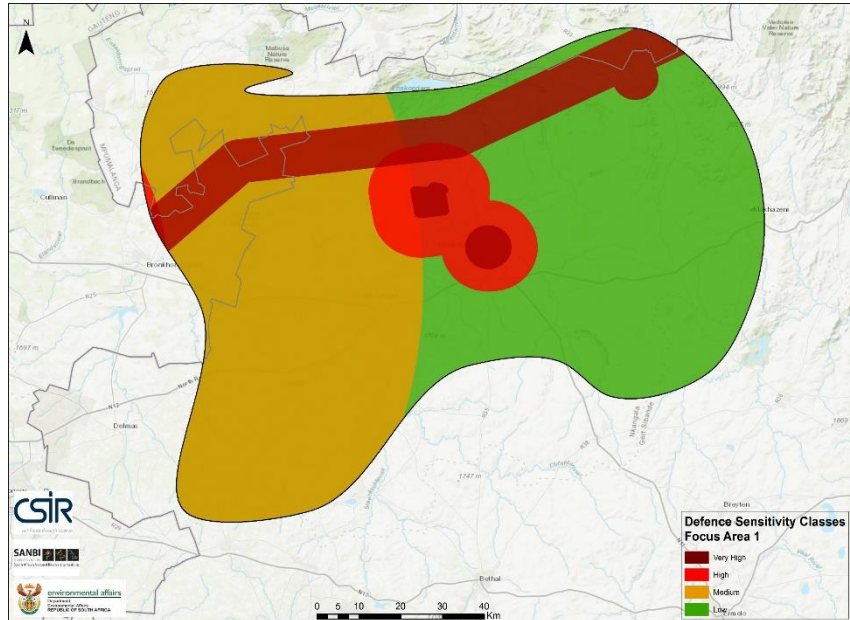
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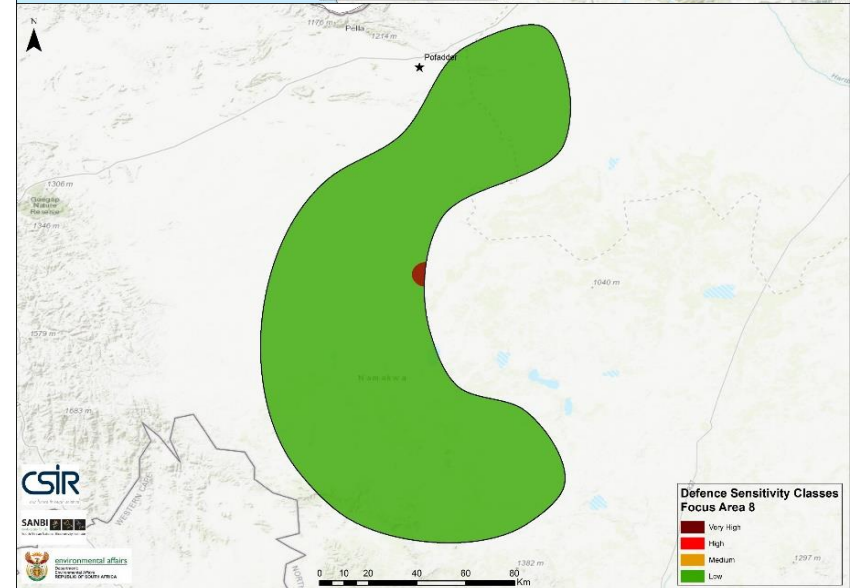
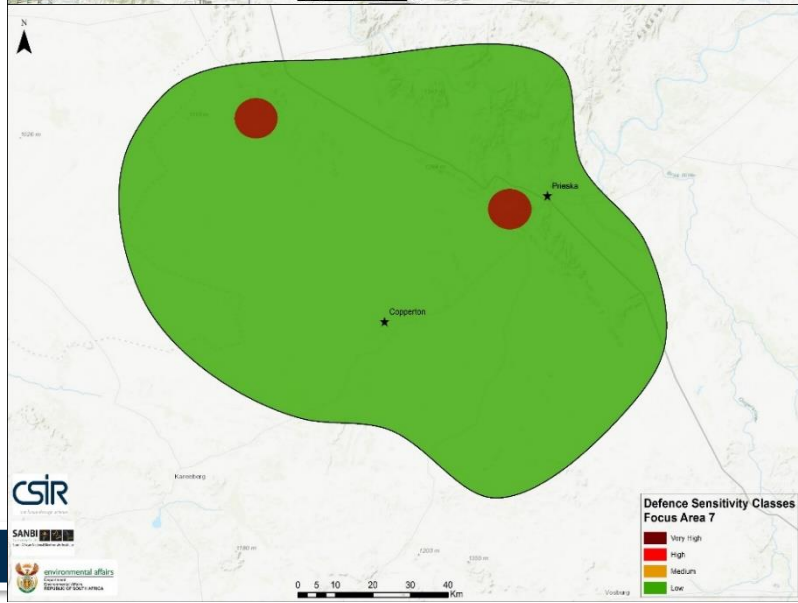
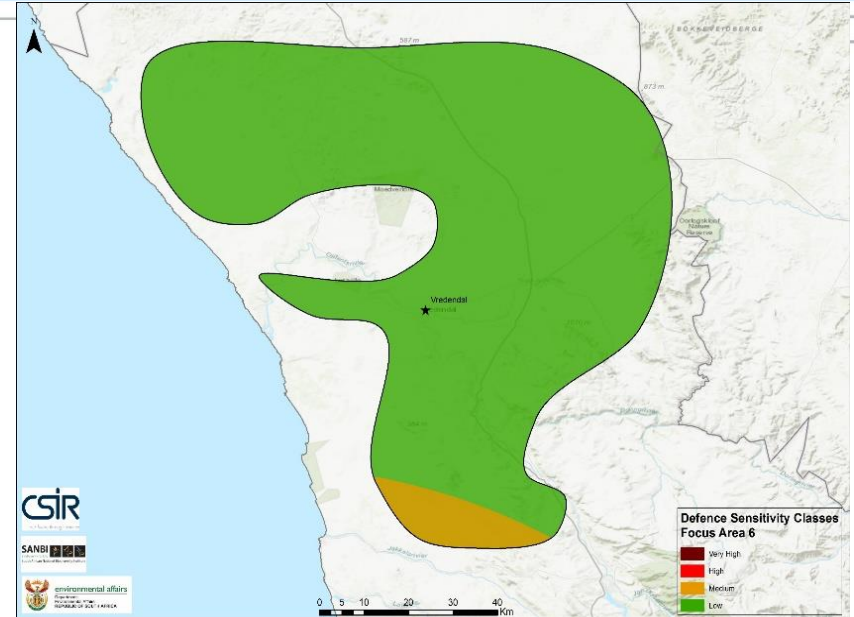
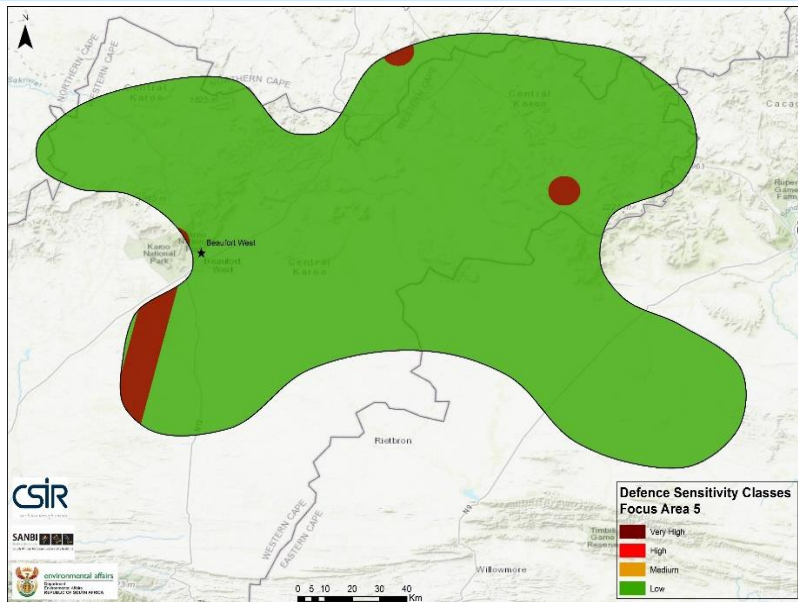
Civil Aviation



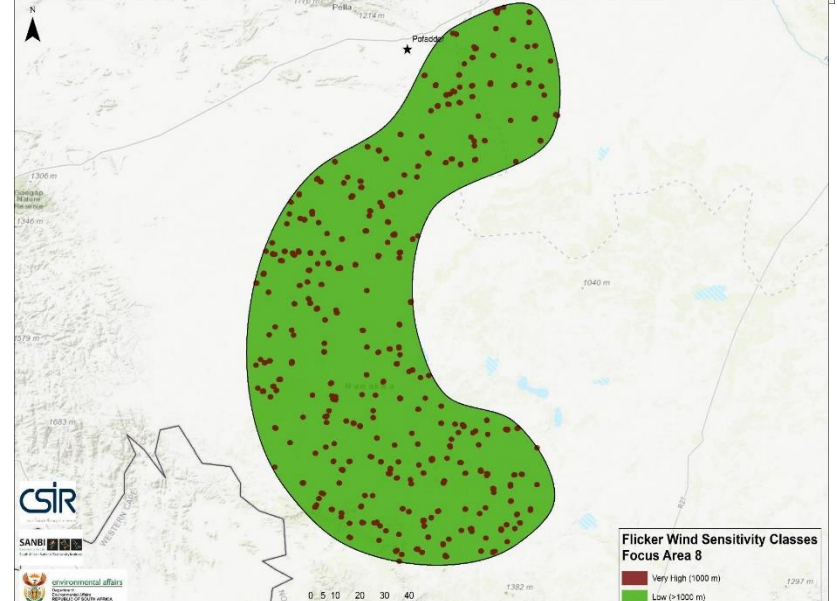
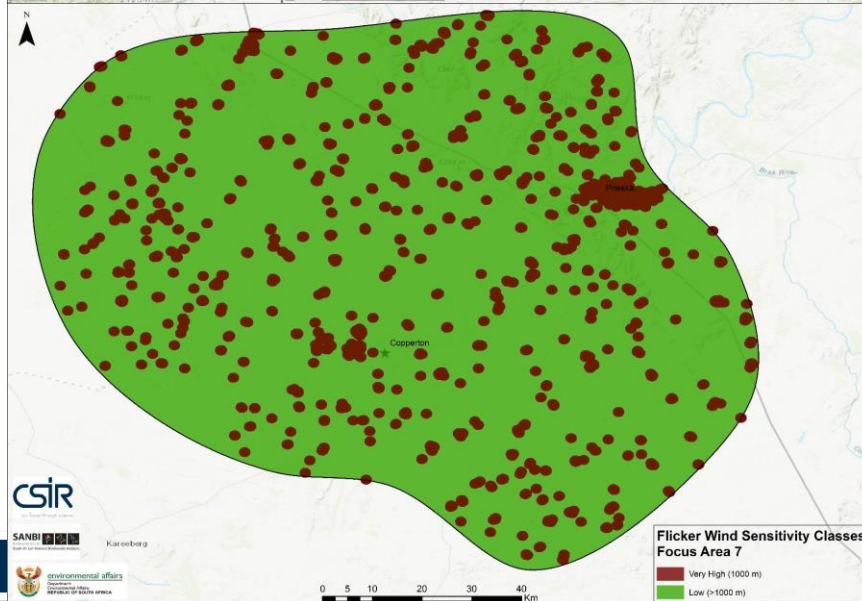
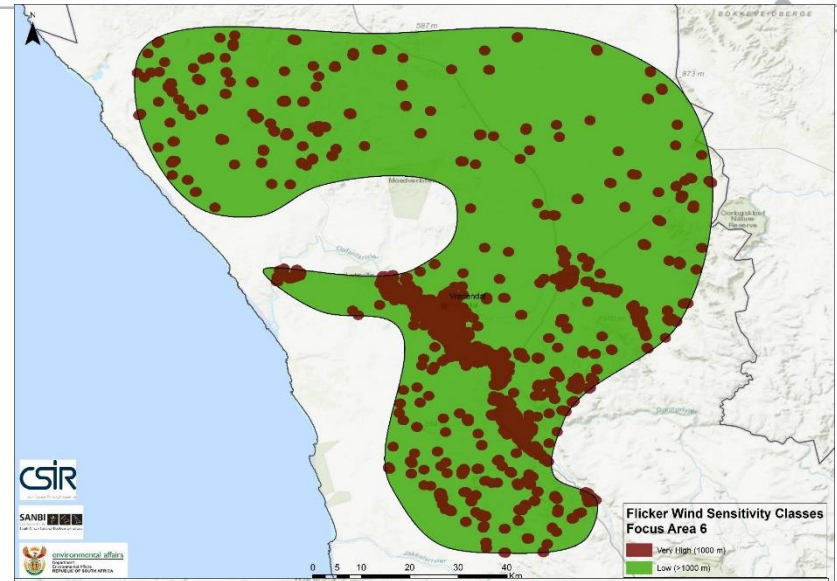
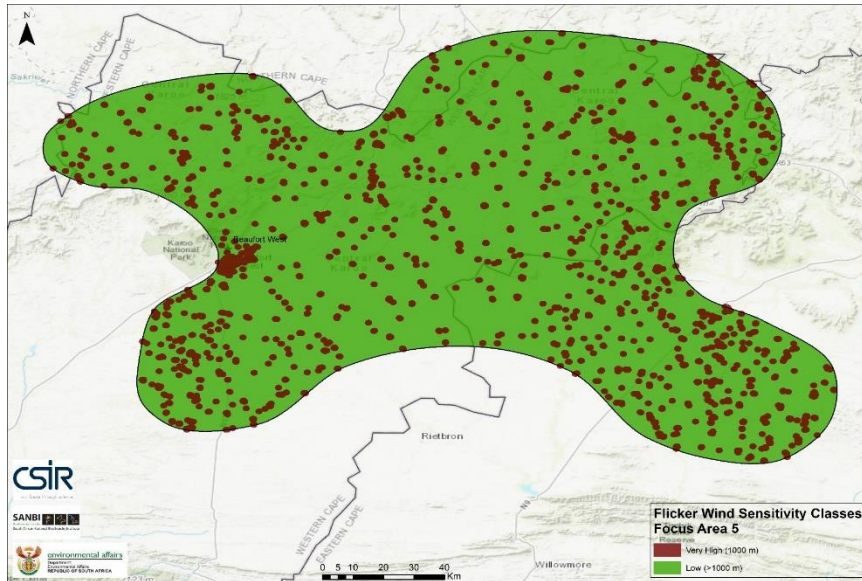
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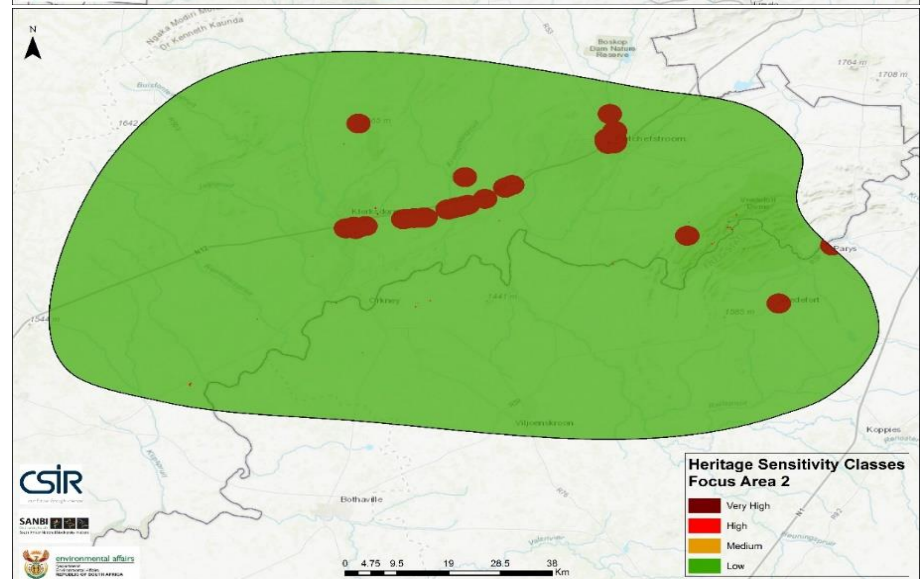
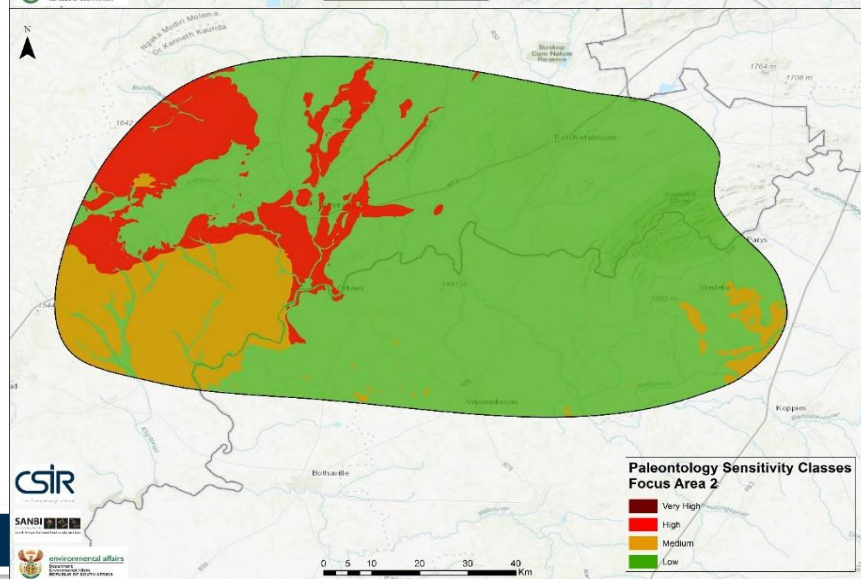
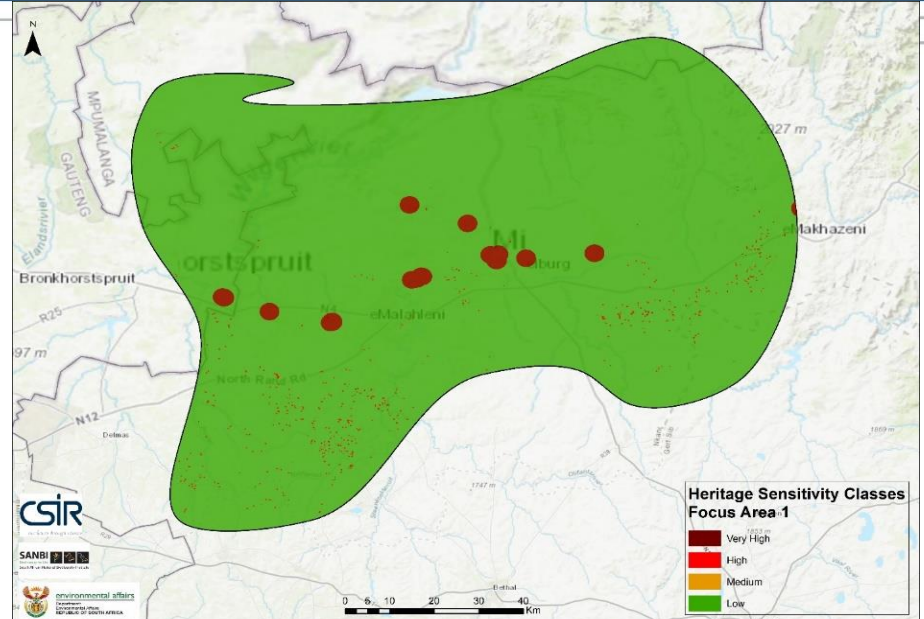
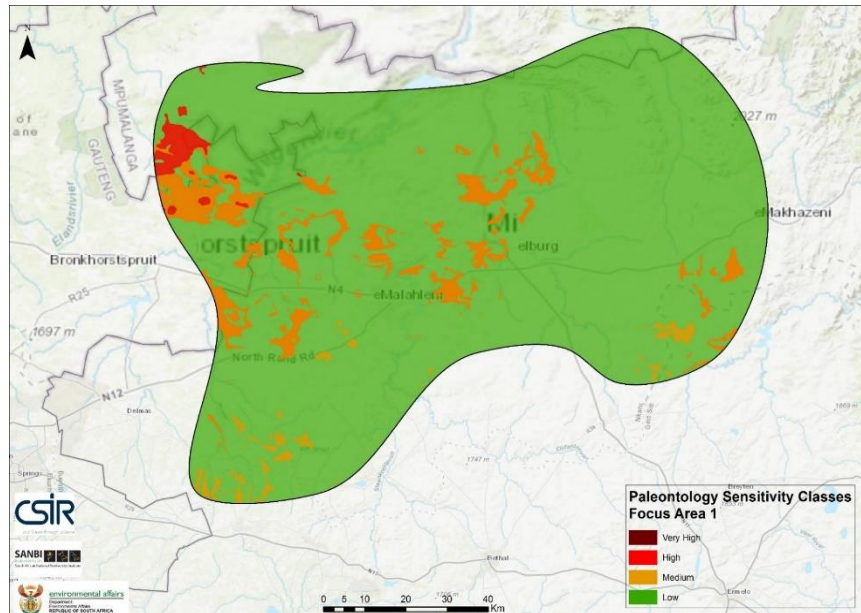
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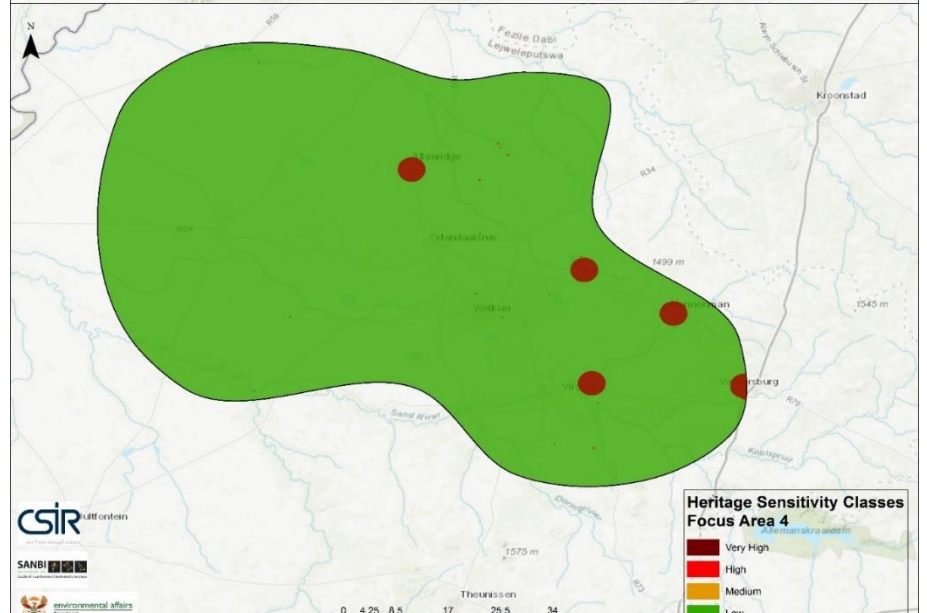
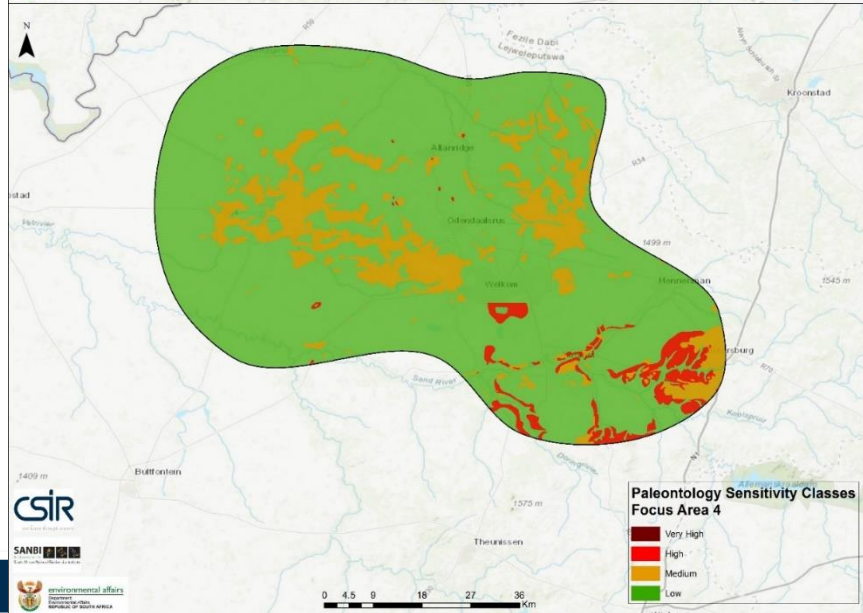
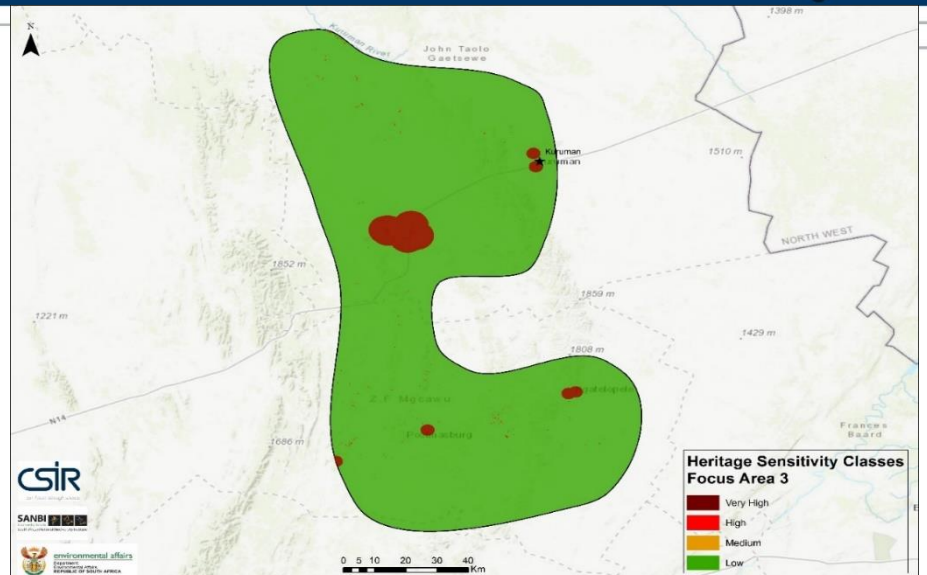
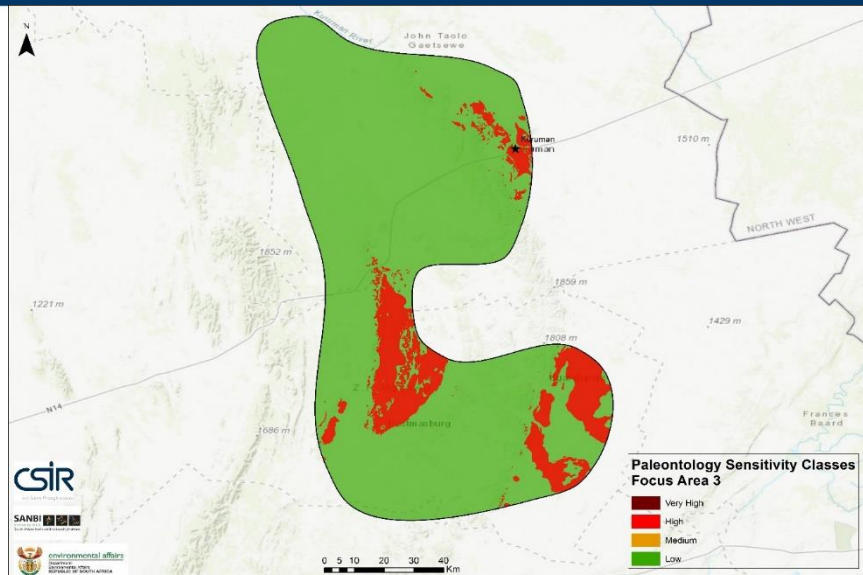
Flicker



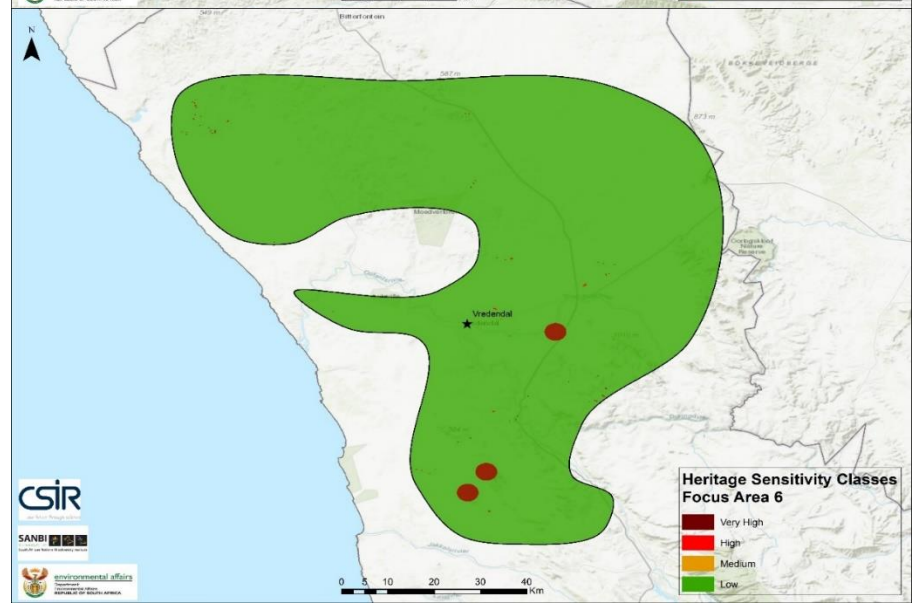
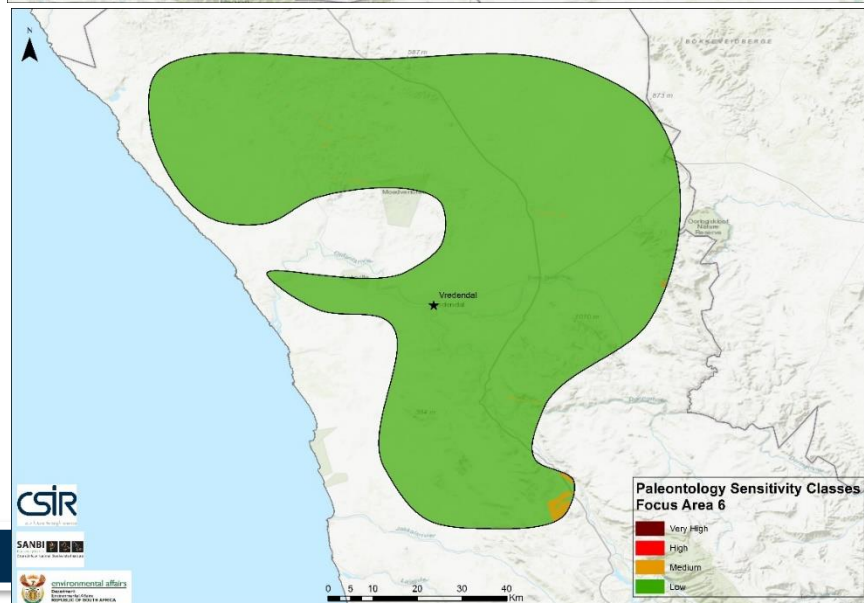
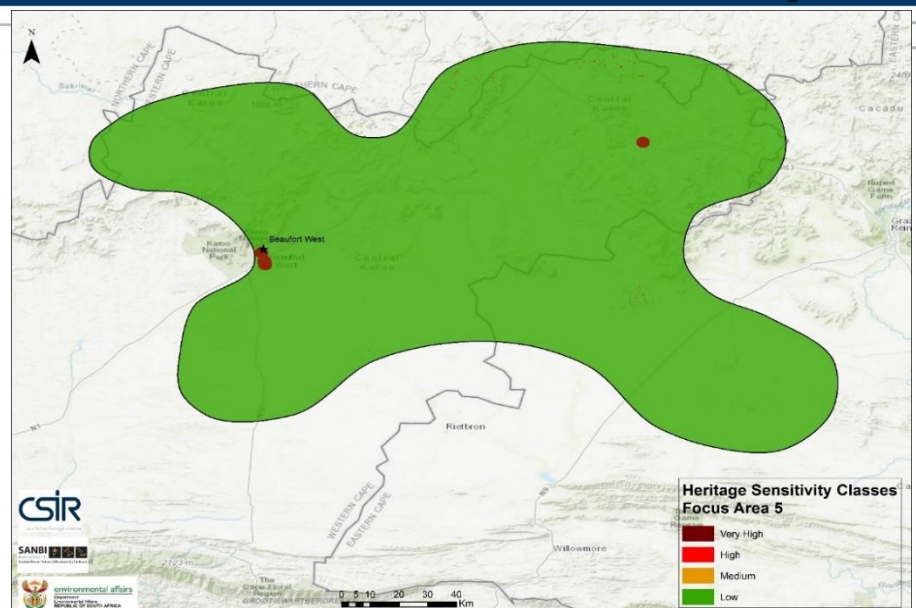
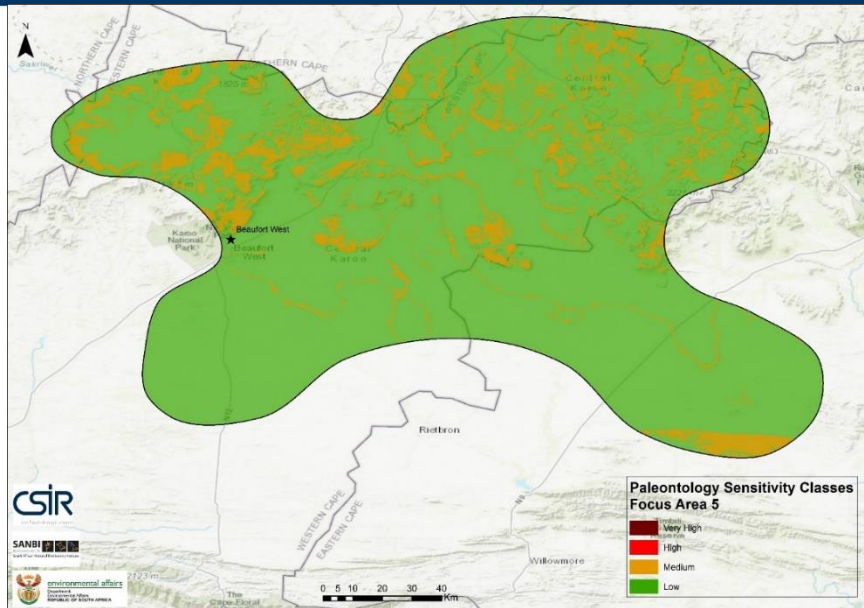
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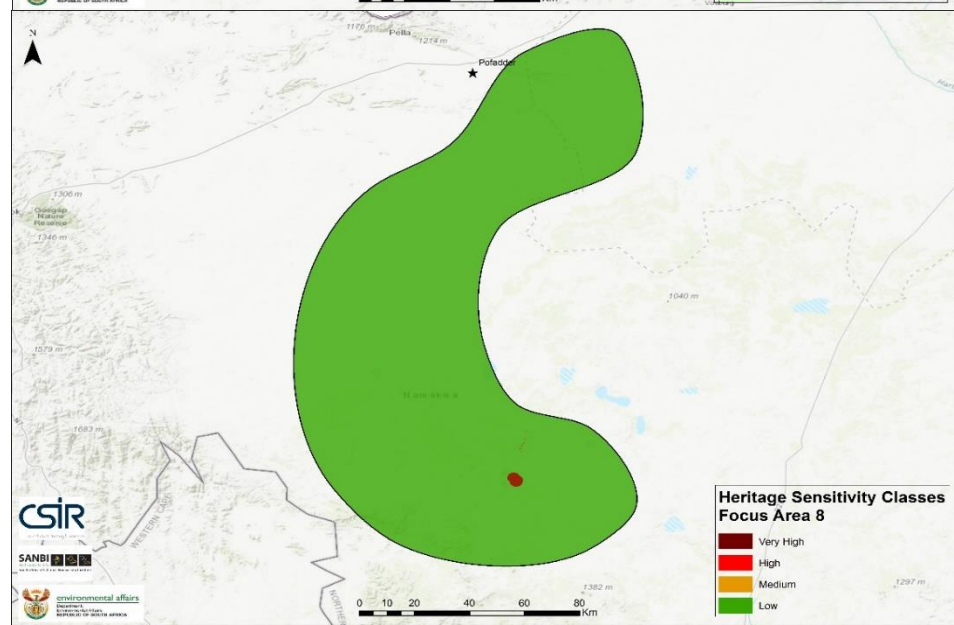
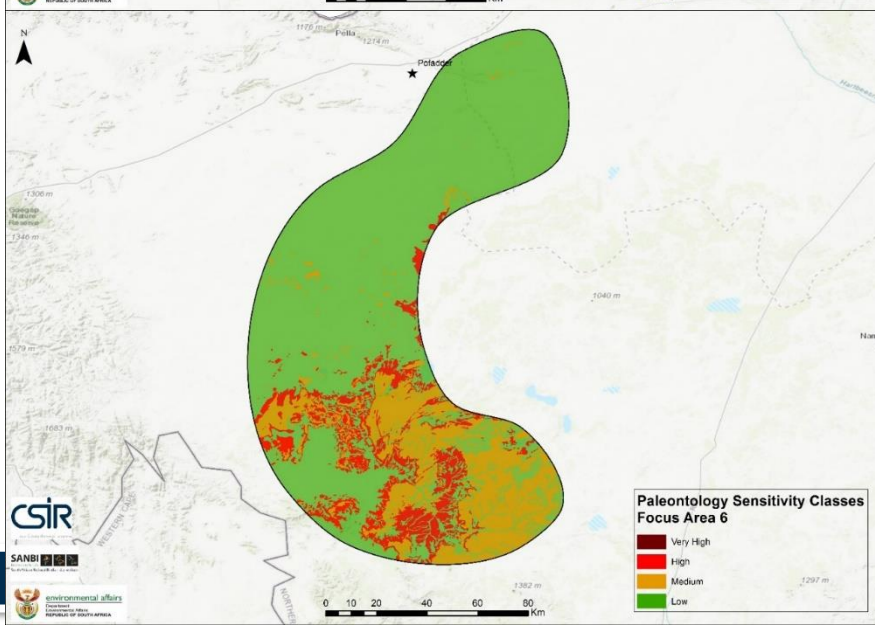
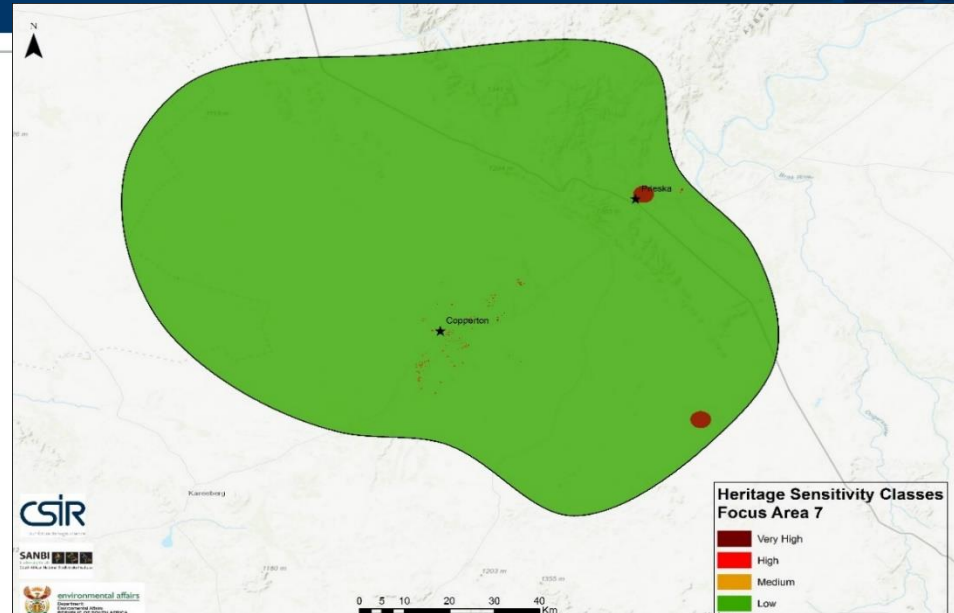
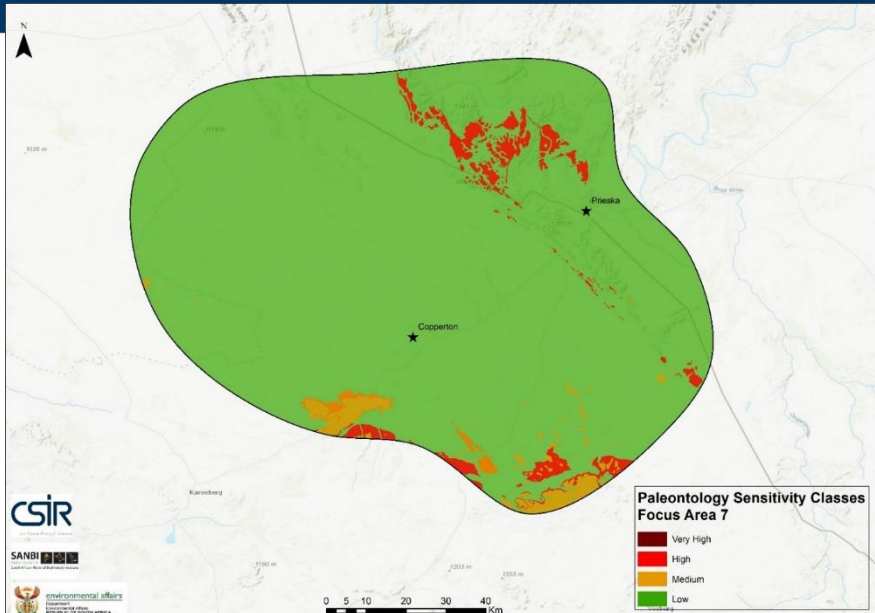
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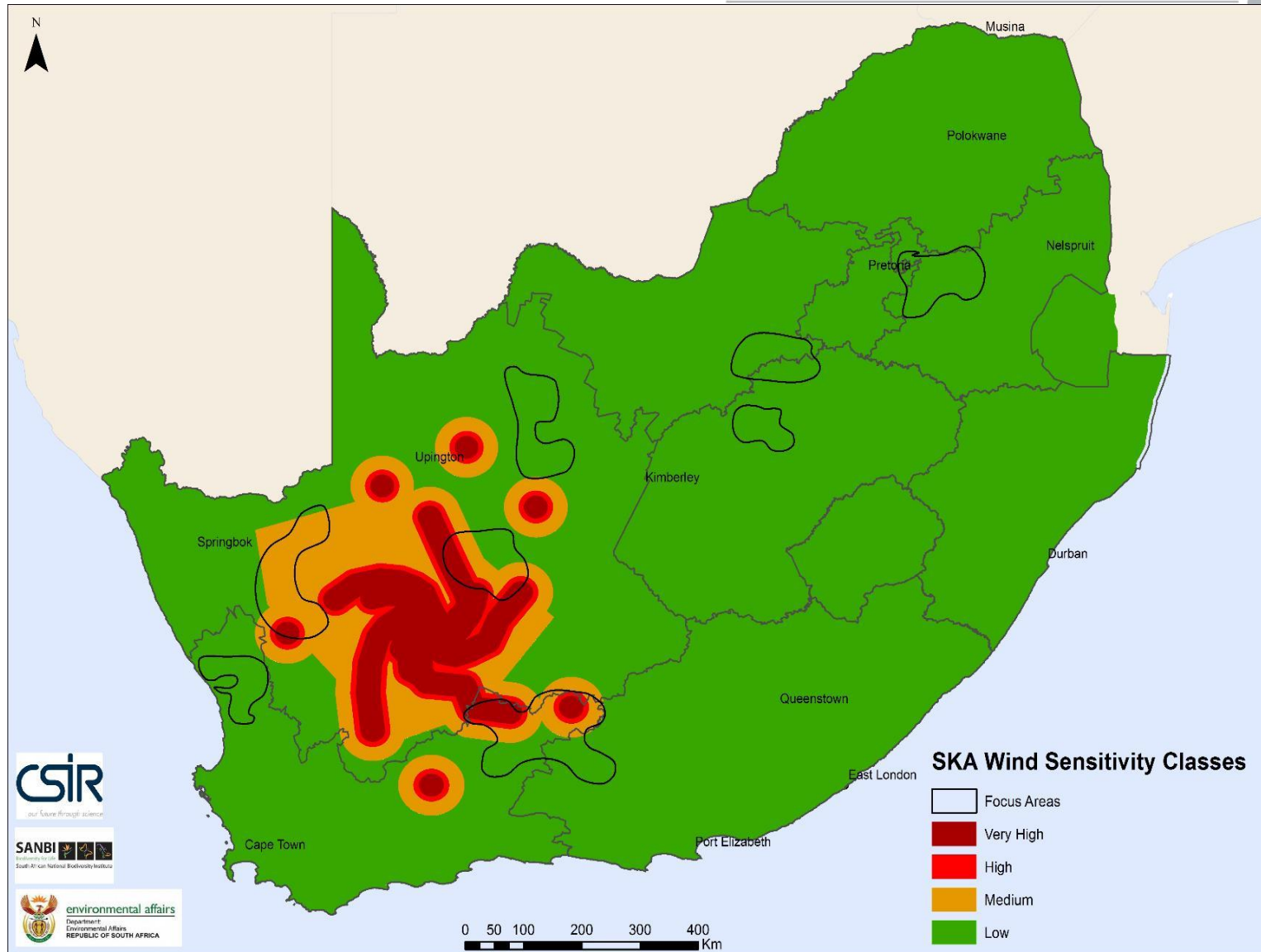


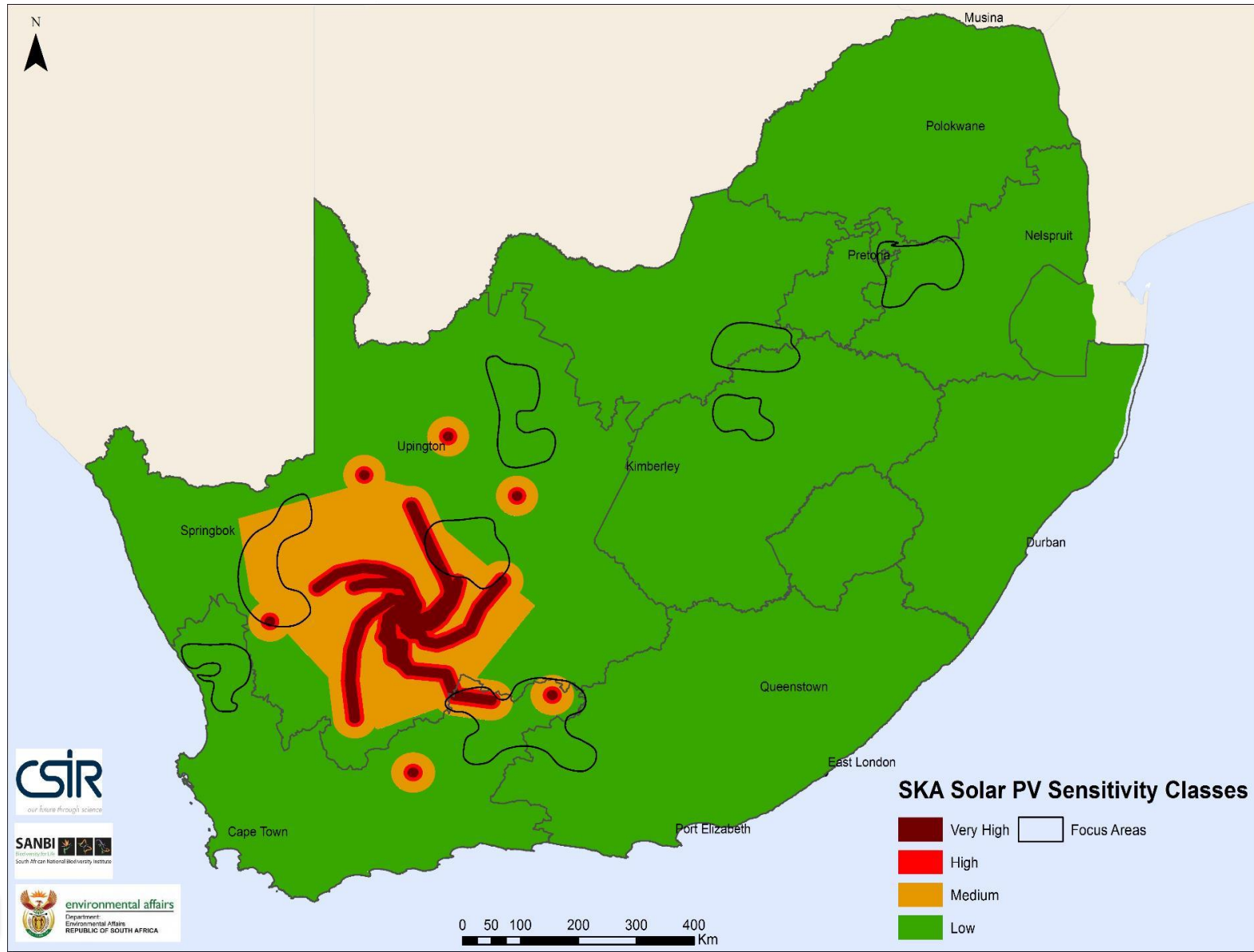
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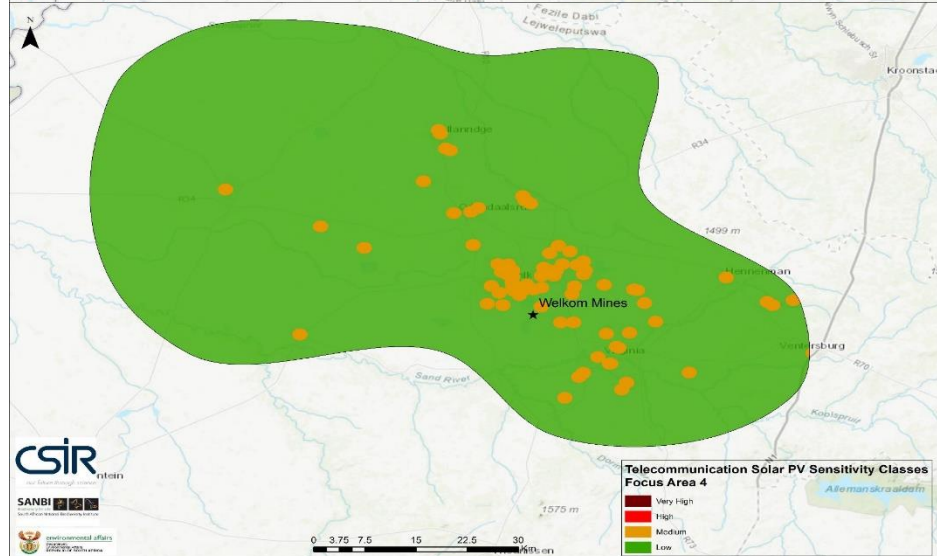
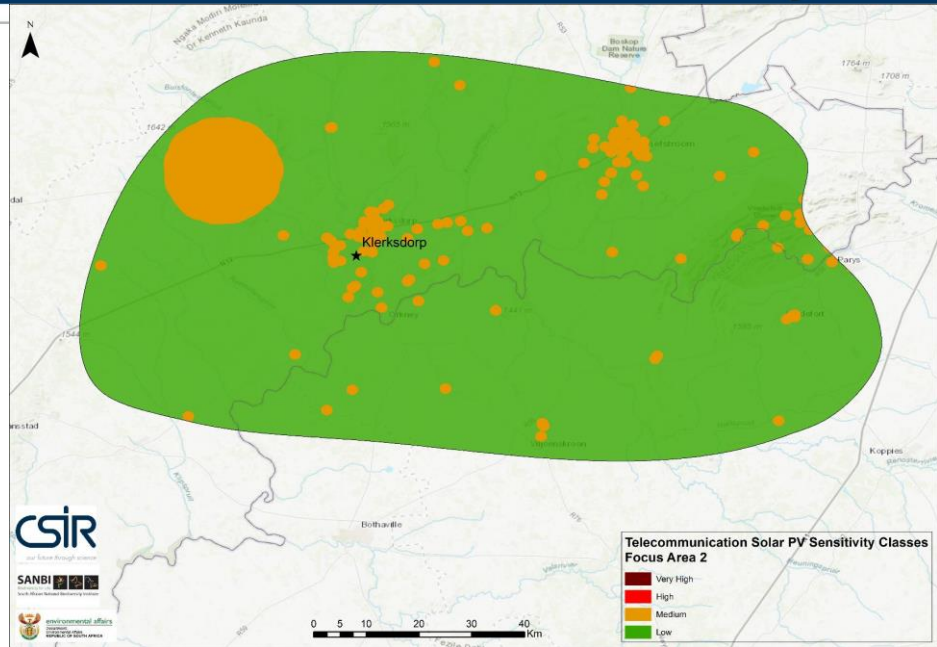
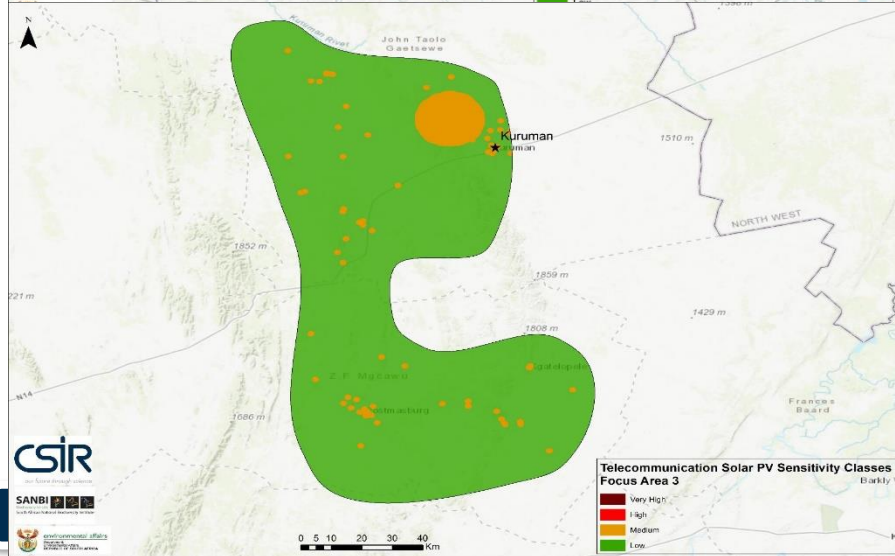
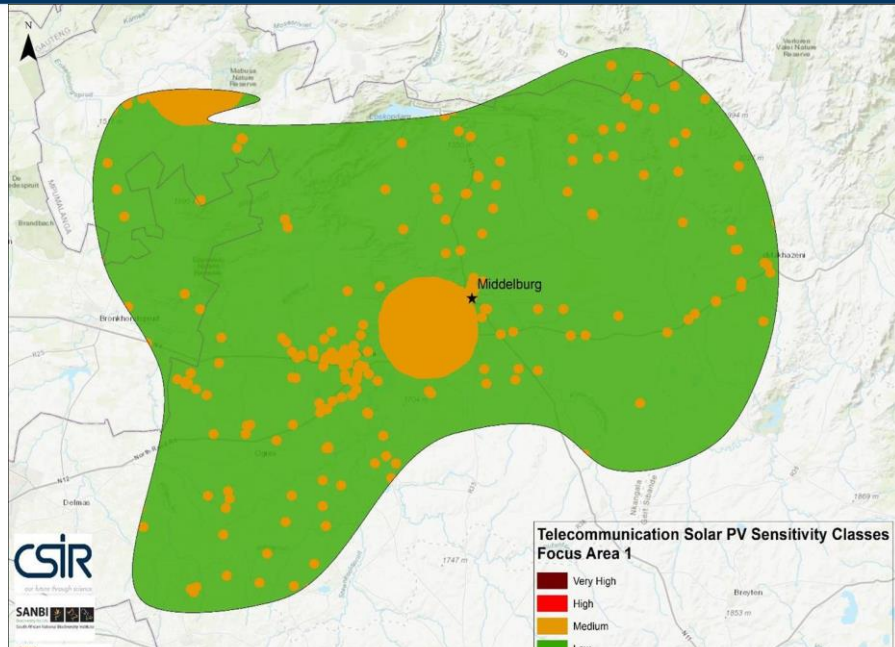
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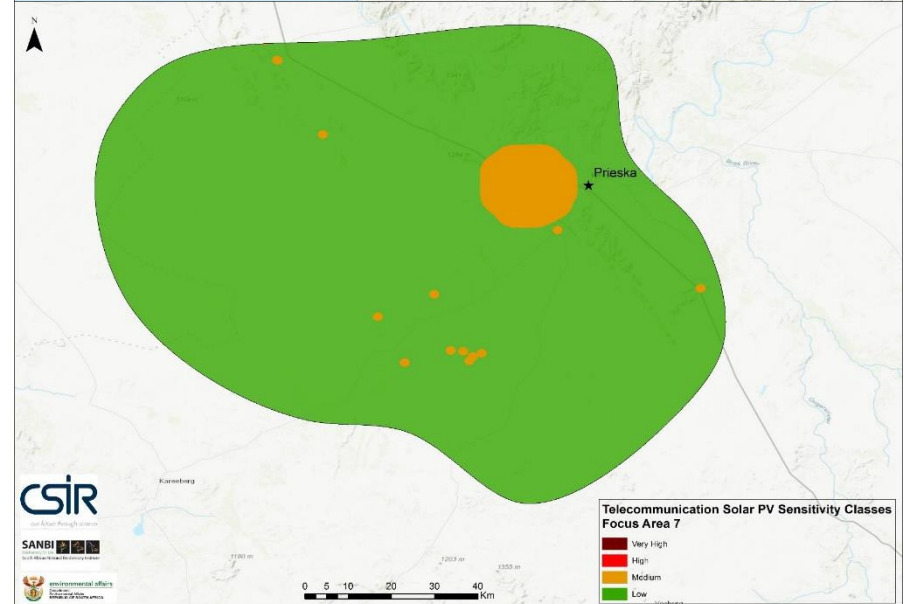
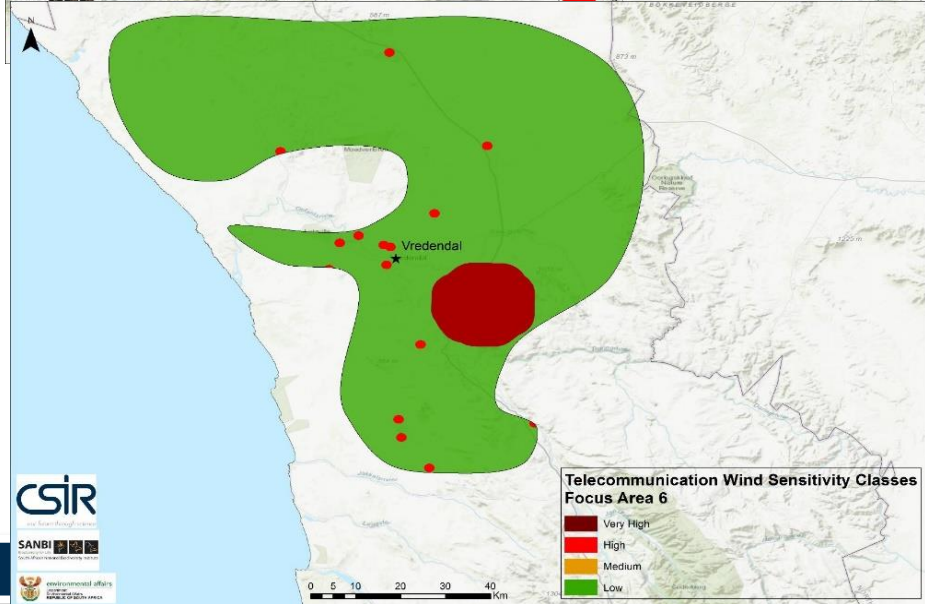
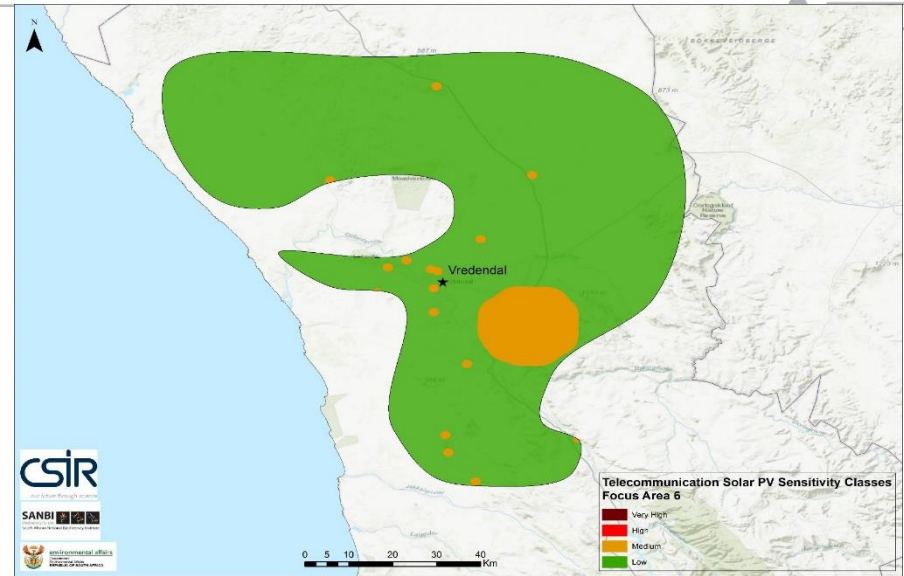
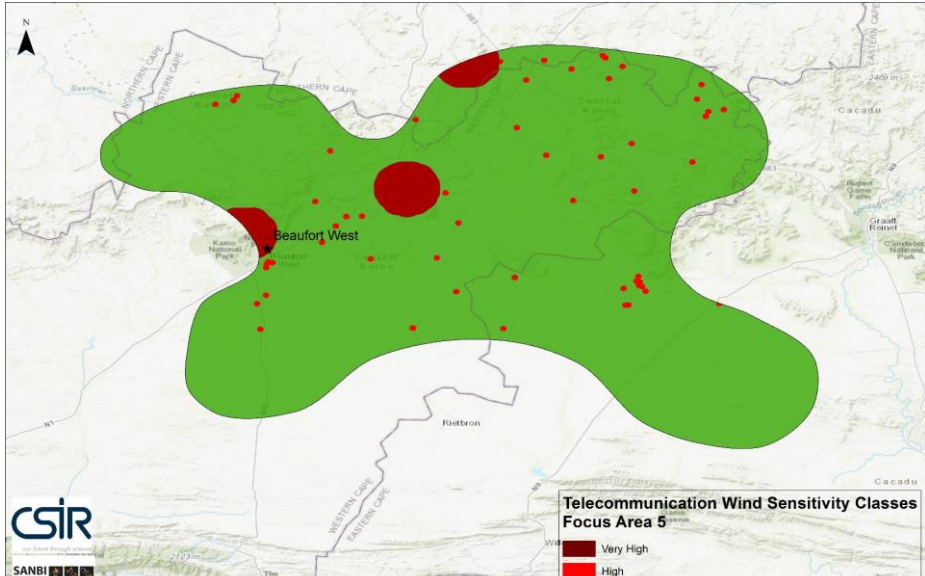




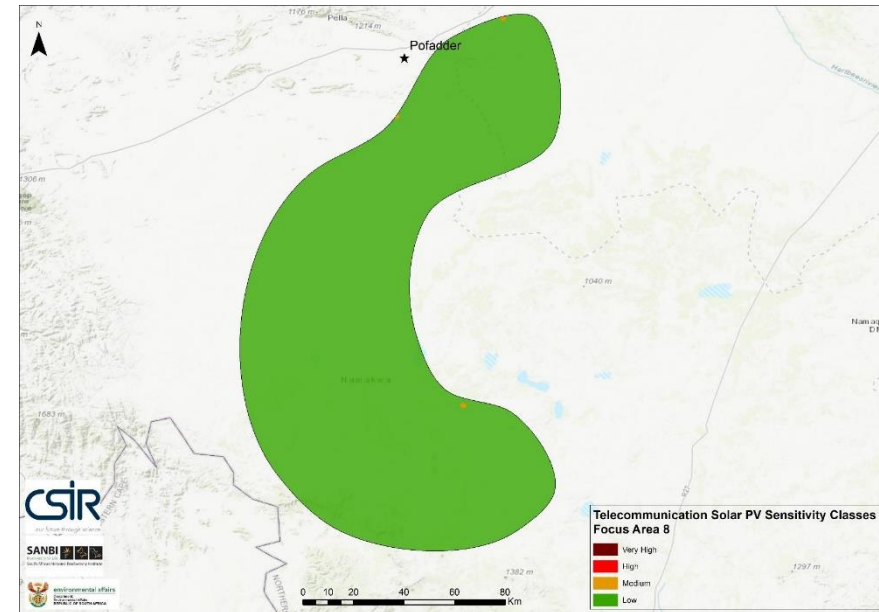
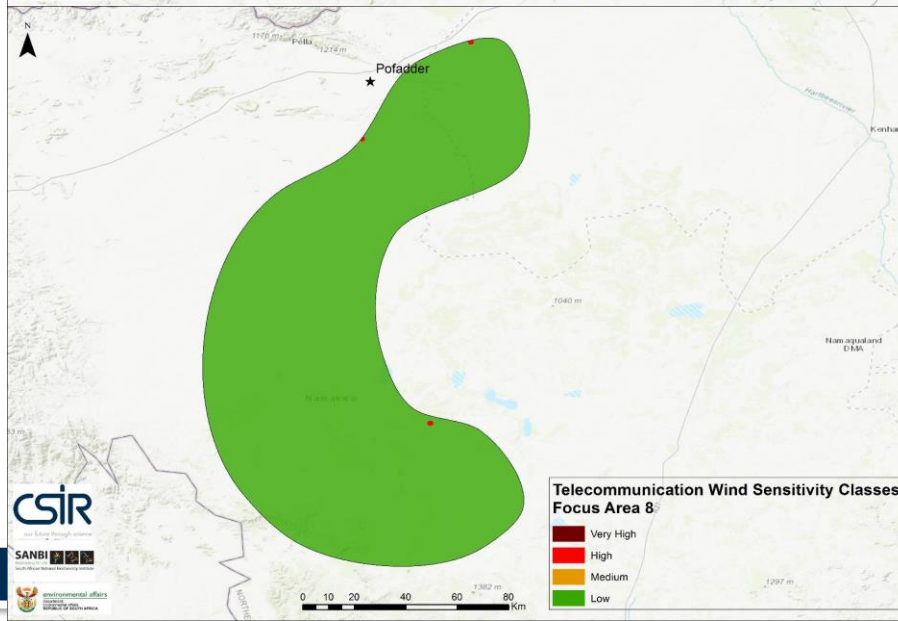
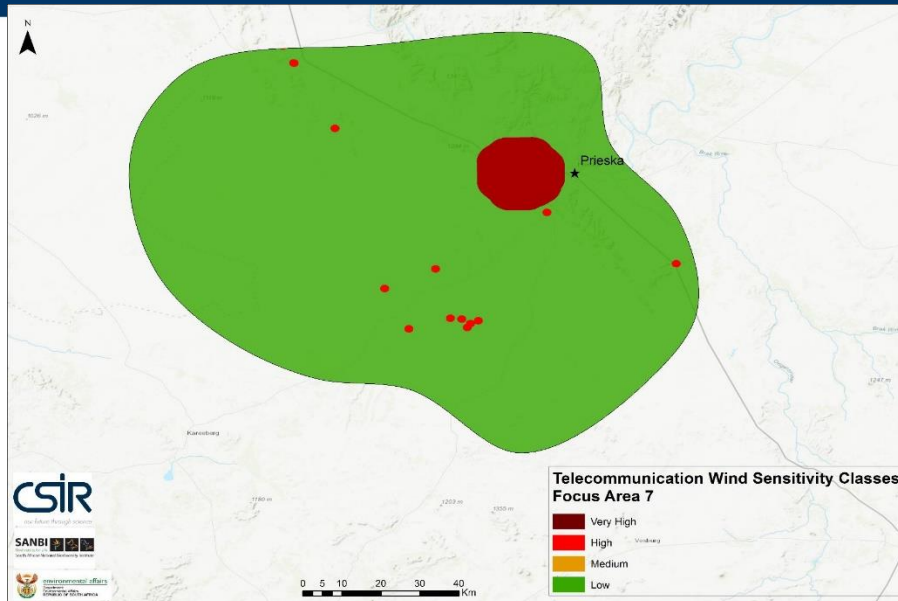
Telecommunication



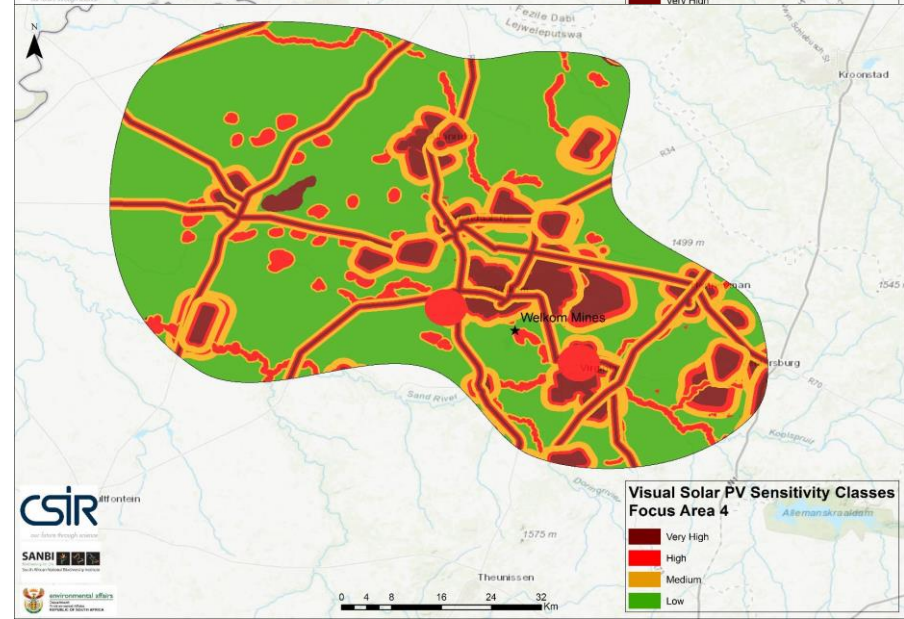
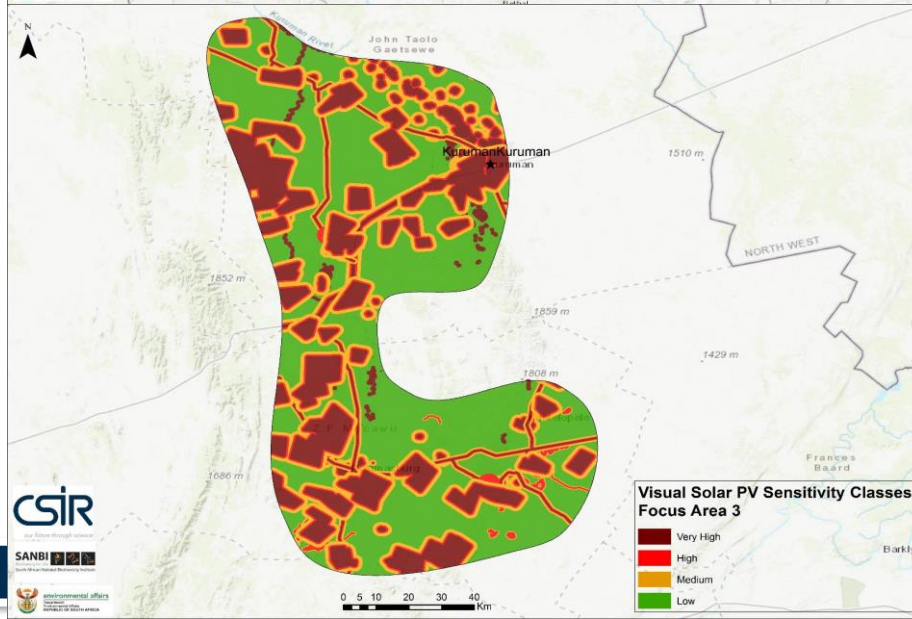
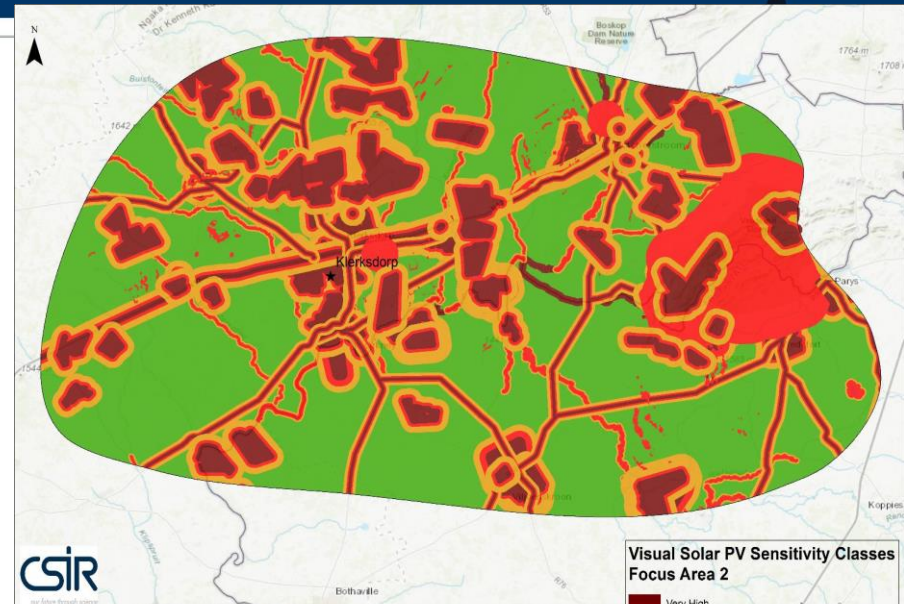
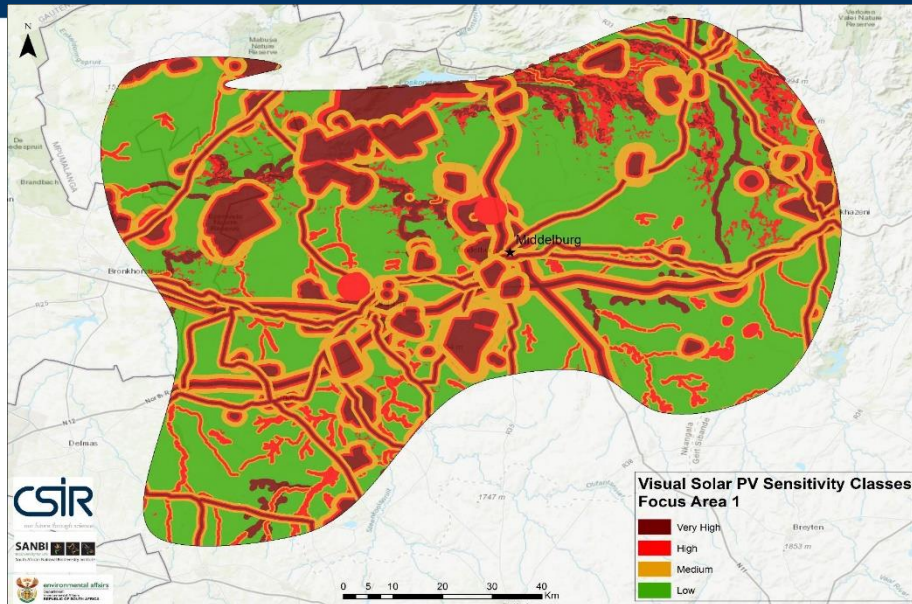
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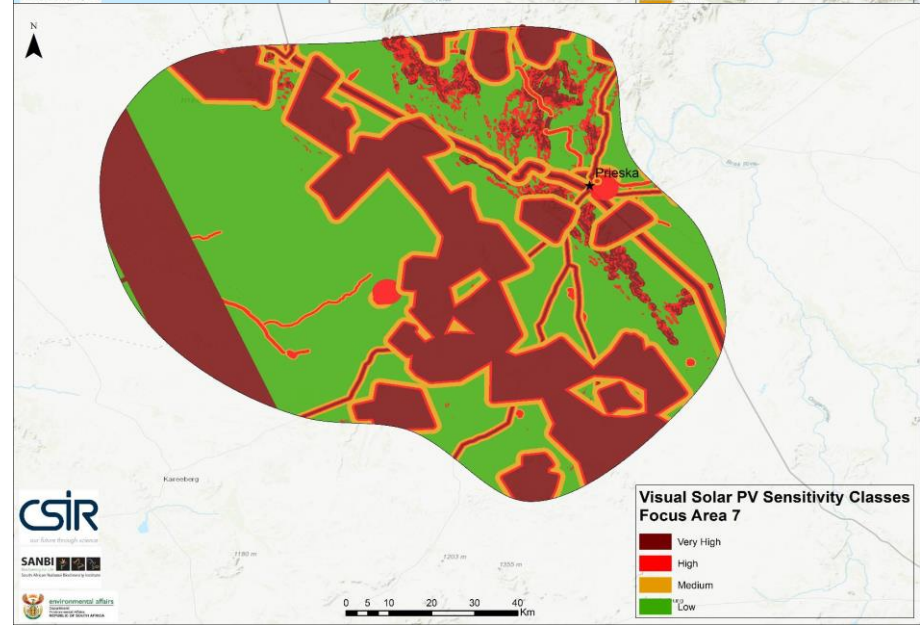
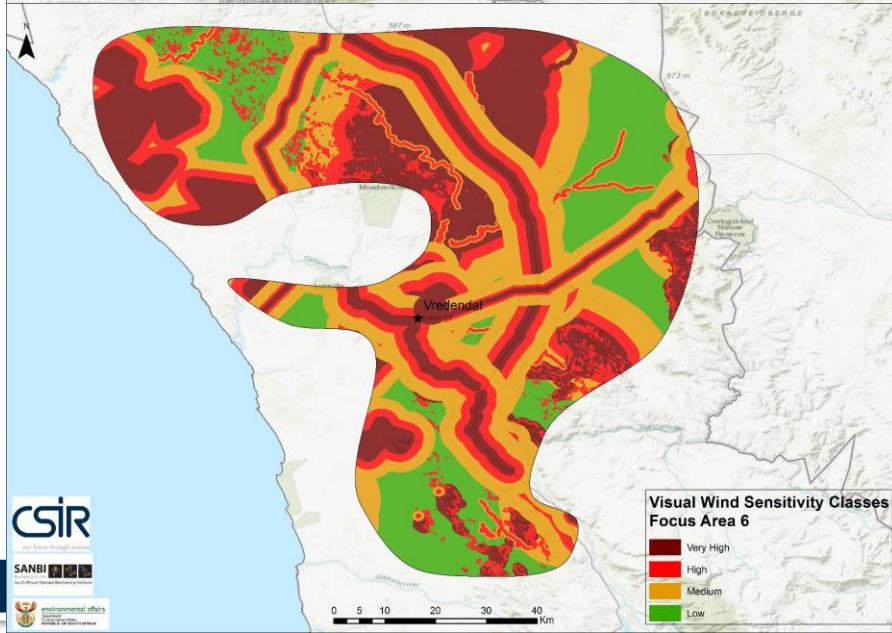
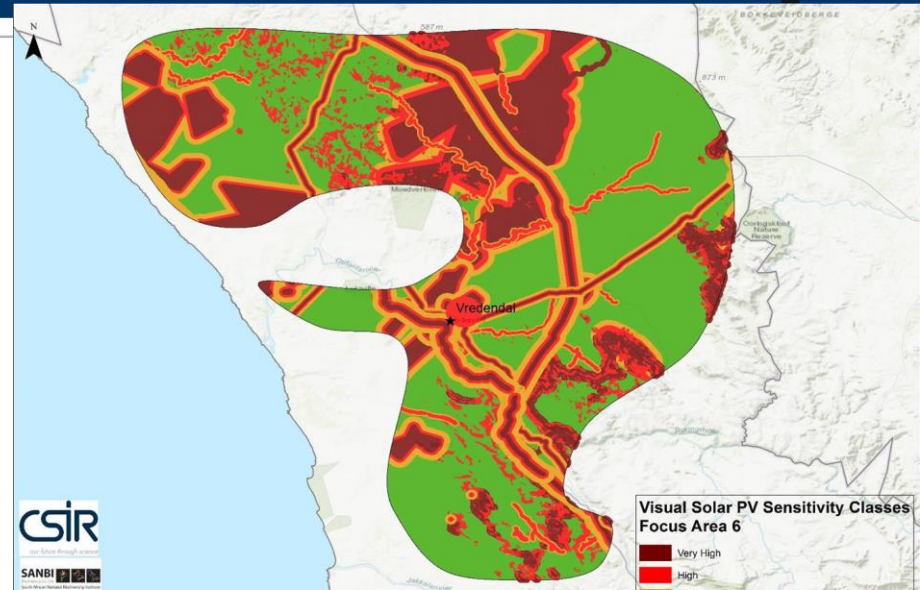
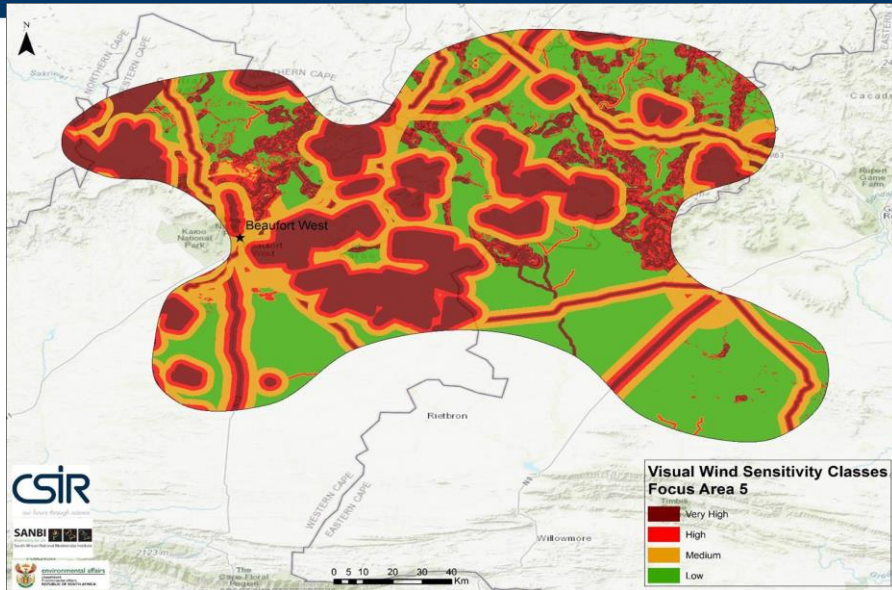
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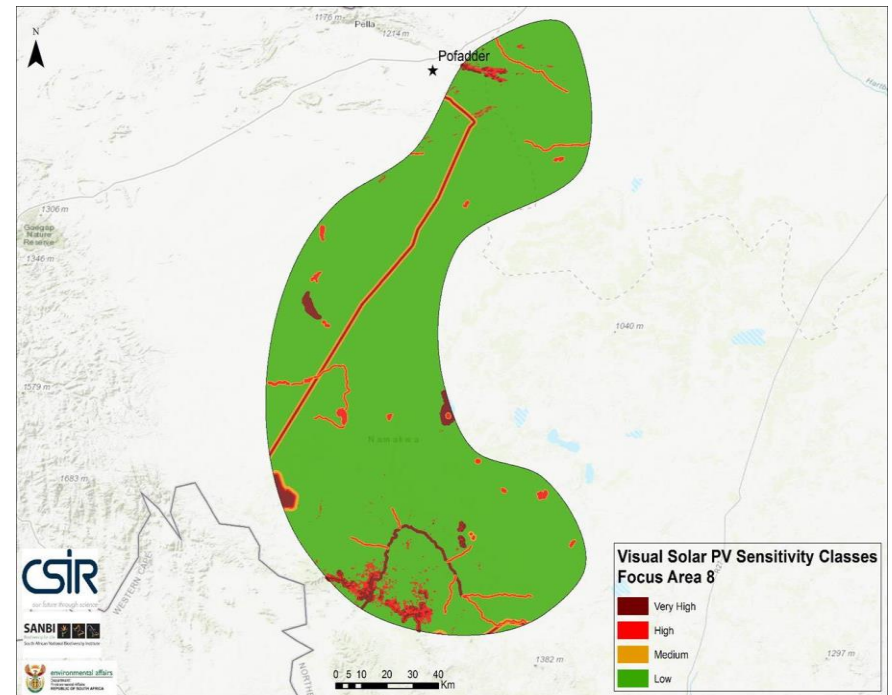
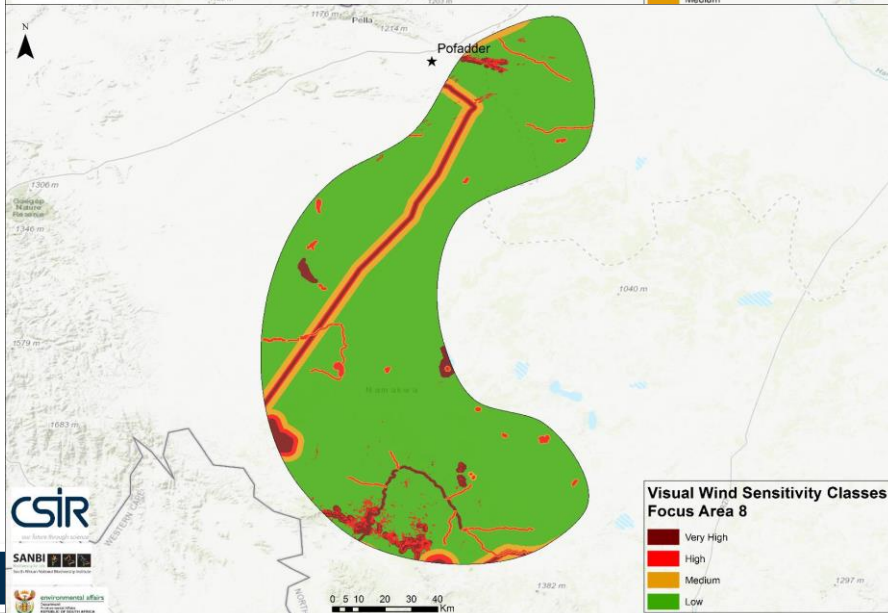
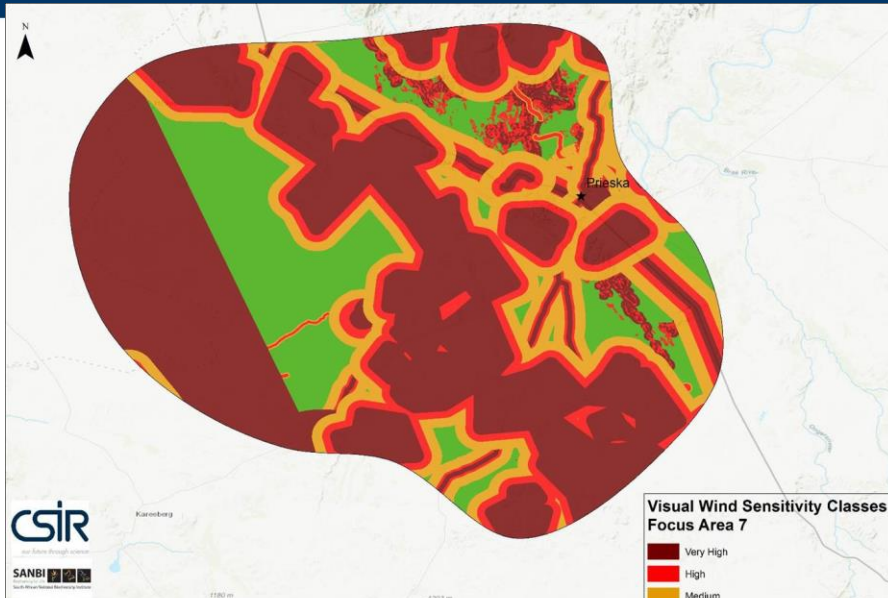
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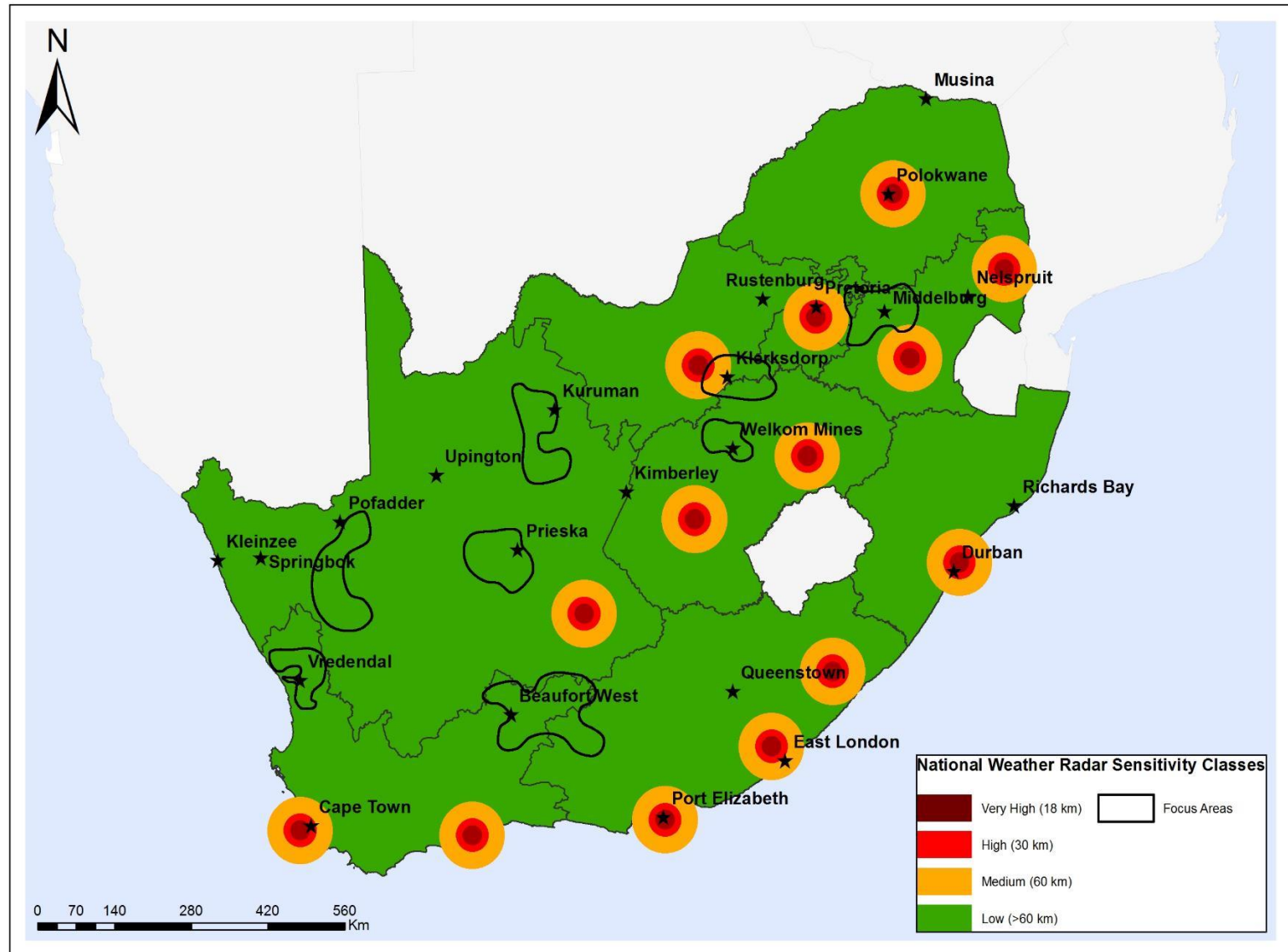
Visual



Visual



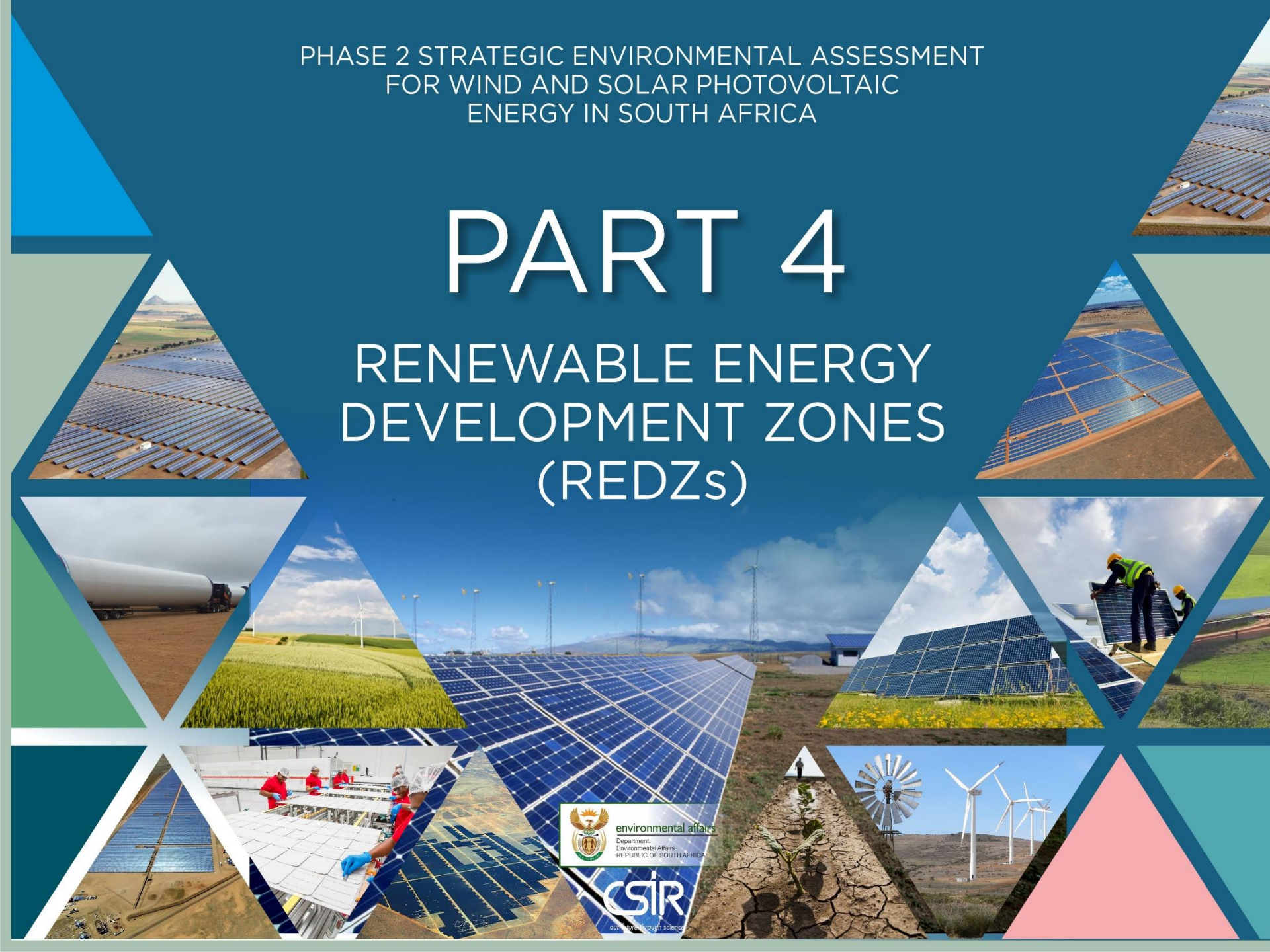
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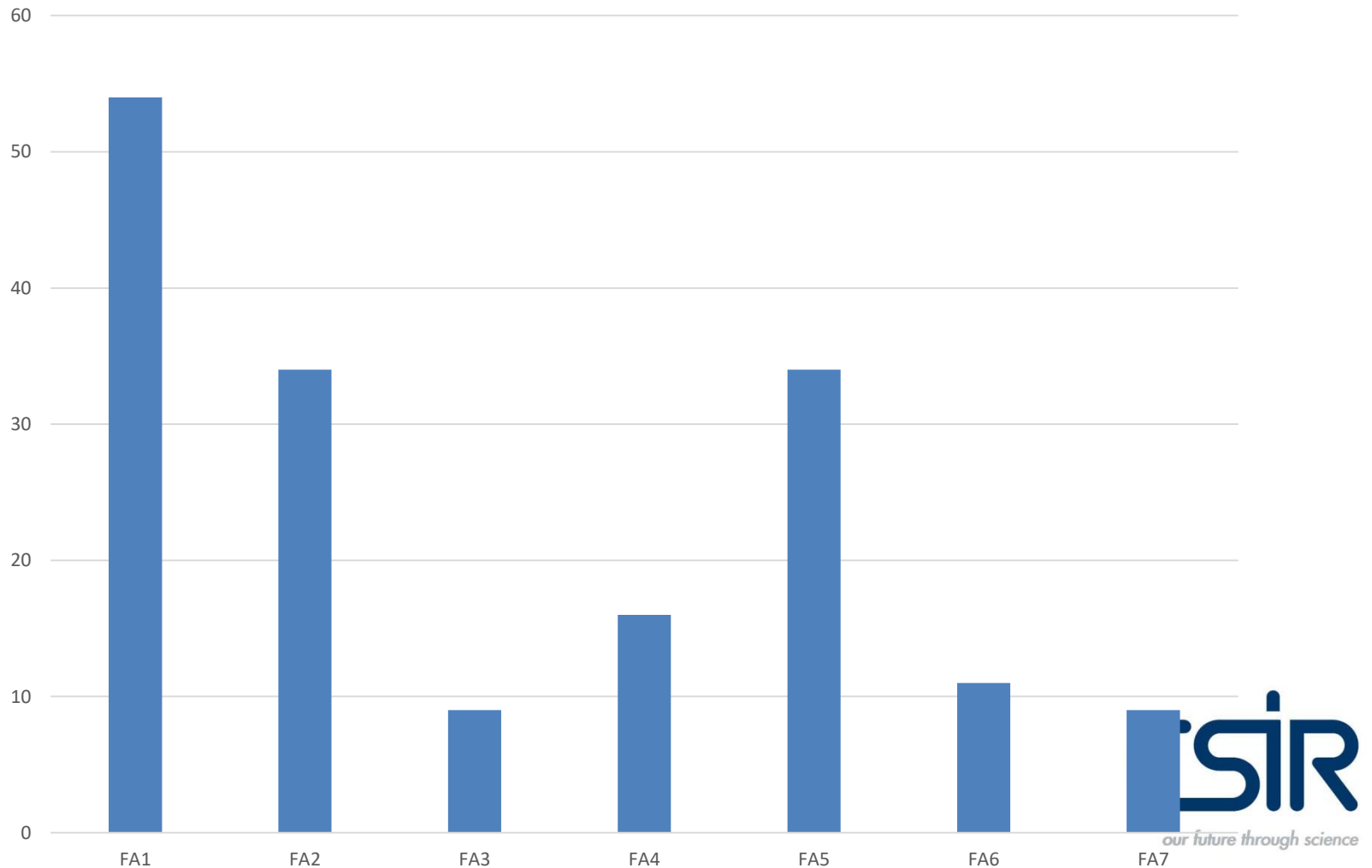
PHASE 2 STRATEGIC ENVIRONMENTAL ASSESSMENT
FOR WIND AND SOLAR PHOTOVOLTAIC
ENERGY IN SOUTH AFRICA

PART 4

RENEWABLE ENERGY DEVELOPMENT ZONES (REDZs)

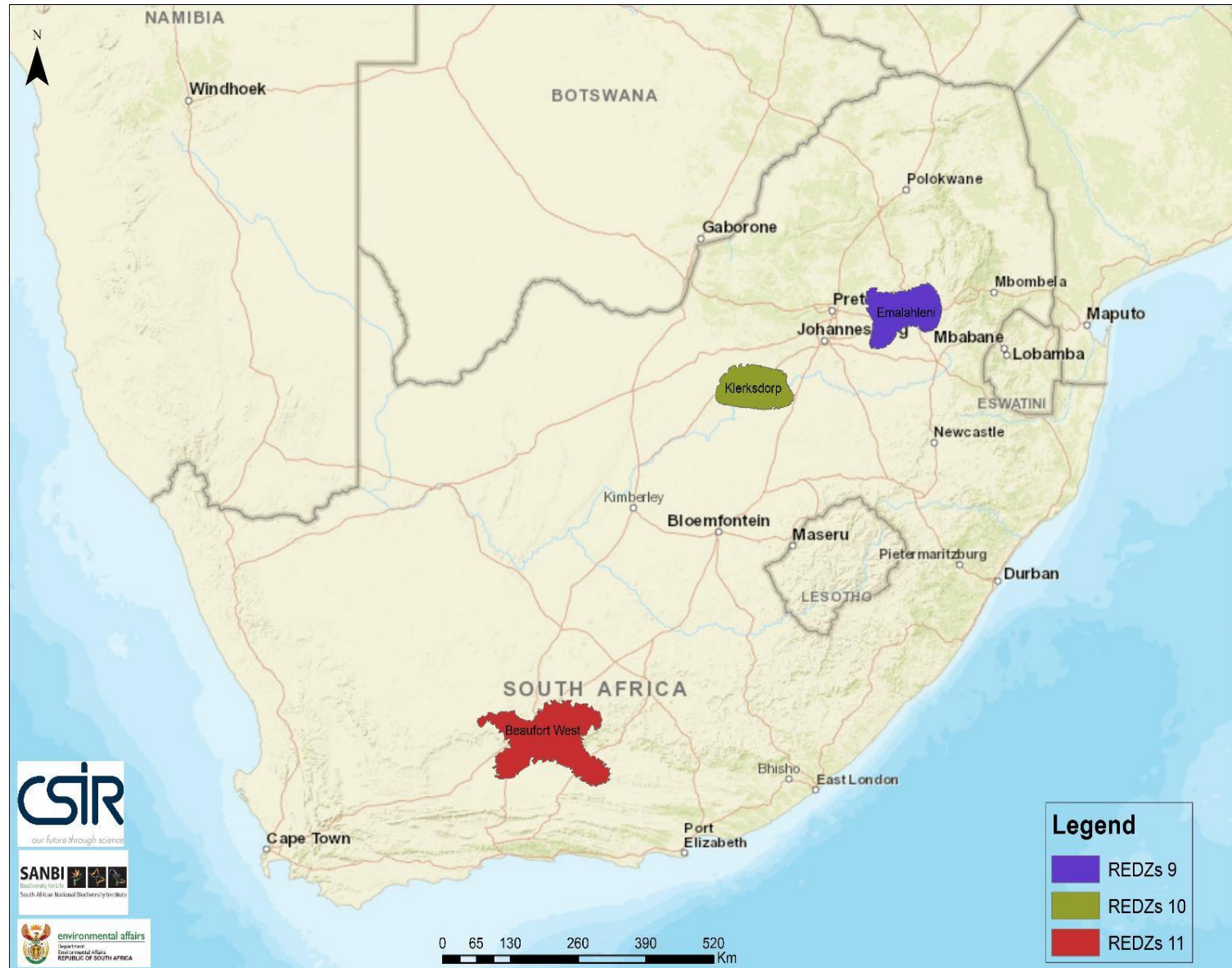


Industry Survey #2

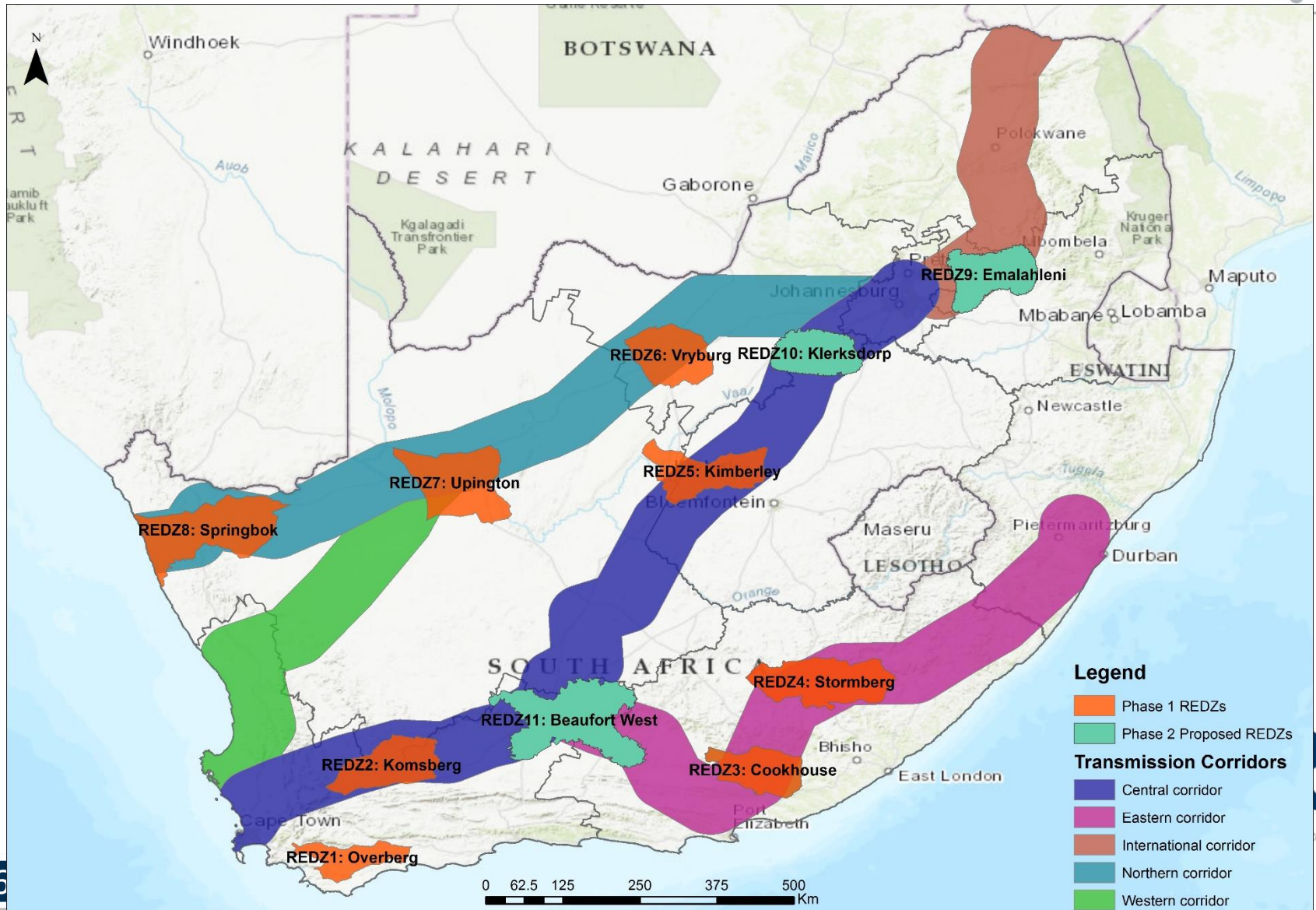




Proposed REDZs



Phase 1 and Phase 2 SEA outcomes



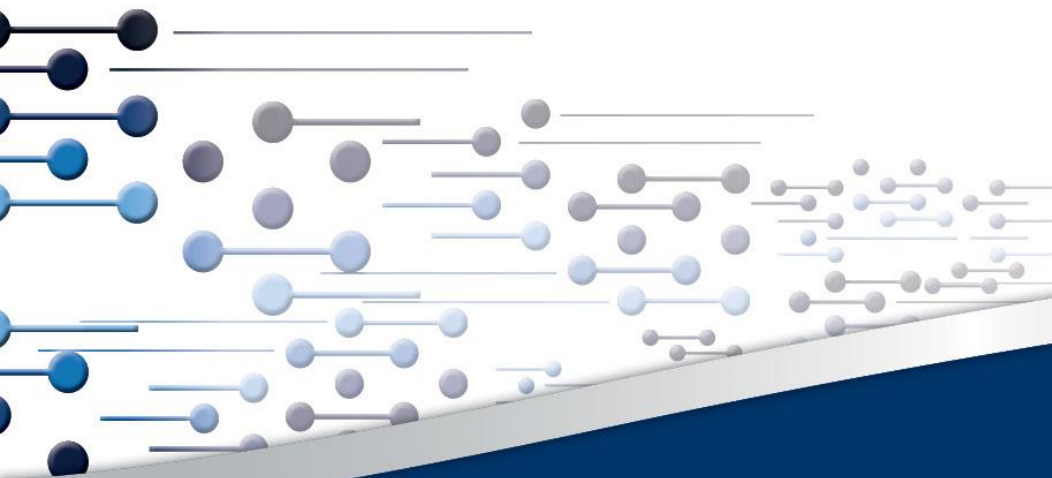
Overview of current transmission evacuation capacity estimation

	Current (C)		
	MTS Substation	GCCA Capacity 2022 High Voltage Limit LL (MW)	REDZ Total (MW) (C)
REDZ1	Kruispunt	980	3010
	Rockdale	1050	
	Vulcan	980	
REDZ2	Hermes	1576	2598
	Mercury	1022	
REDZ5	Droerivier	254	254
Total			5 862

REDZ 5: Potential to add 1000 MW evacuation capacity at Gamma substation by adding a 765/400/132 kV substation, potentially including Victoria substation

DEFF National Wind and Solar PV SEAs

Way Forward



Way forward

- Outputs of the SEA
 - REDZs
 - Generic EMPr
 - Additional Protocols
 - Vulture
 - Bats
 - Flicker
- Three outputs will be gazetted
 - Working Group Process
 - Gazette the intention to implement – request comment
 - Gazette for implementation

Implications of the REDZs

- REDZs
 - Timeframes
 - Allocation of GWs
- EMPr
 - Pre-approved EMPr
- Protocols
 - Guidance on specialist assessments
- Timeframes
 - Mid 2020 for implementation

Thank you

Website: <https://redzs.csir.co.za/>

Email: redzs@csir.co.za